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MNS# PSt SNPaAg107.1

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6) Stream flow records for the water year 1935 / 1936
MNS# PSt SNPaAg107.6

7) Stream flow records for the water year 1936 / 1937
MNS# PSt SNPaAg107.7

Title: Stream flow records for the water year 1927 / 1928

Place of Publication: Harrisburg, Pa.

Copyright Date: 1927 / 1928

Master Negative Storage Number: MNS# PSt SNPaAg107.1

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246 30 Stream flow records of Pensylvania $f1927/28-1932/33, 1936/37-1904/41
260 [Harrisburg, Pa.] $bThe Service $c1922-1941
300 v. $bill., charts $c23 cm.
310 Annual $b1932/33-1940/41
321 Annual $b1921/22-1926/27
321 Triennial $b1928/32
362 0 1921/22-1940/41
500 "All previous records may be found in the annual reports of the Water Supply Commission of Pennsylvania for the years 1910 to 1921": 1921/22, p. 9
500 Title alternates between: Stream flow records; and, Stream flow records of Pennsylvania.
500 After 1941 included in the annual water supply reports of the U. S. Geological Survey
500 Prepared 1933/34-1940/41 in cooperation with the United States Geological Survey
515 Report year ends Sept. 30
515 Records for 1928/1929-1931/1931 combined in one issue
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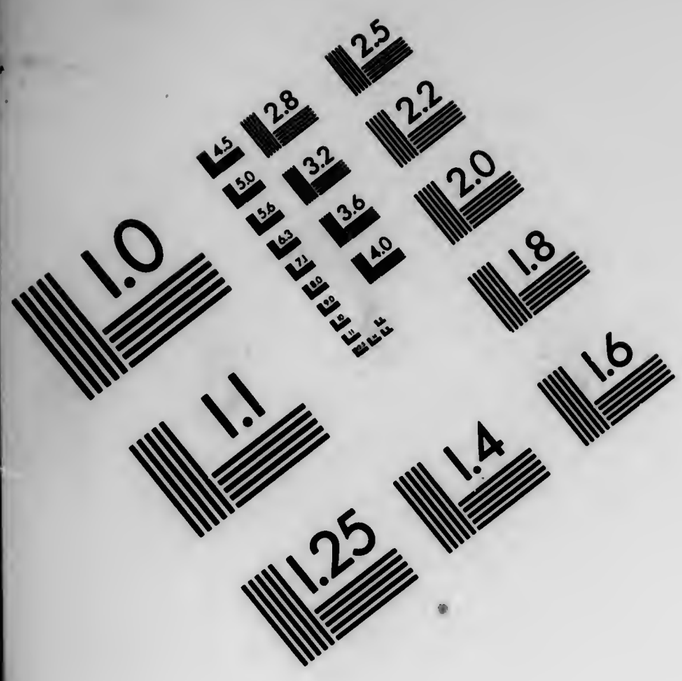

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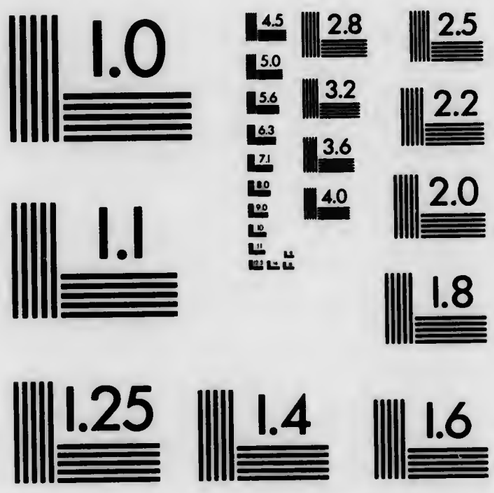

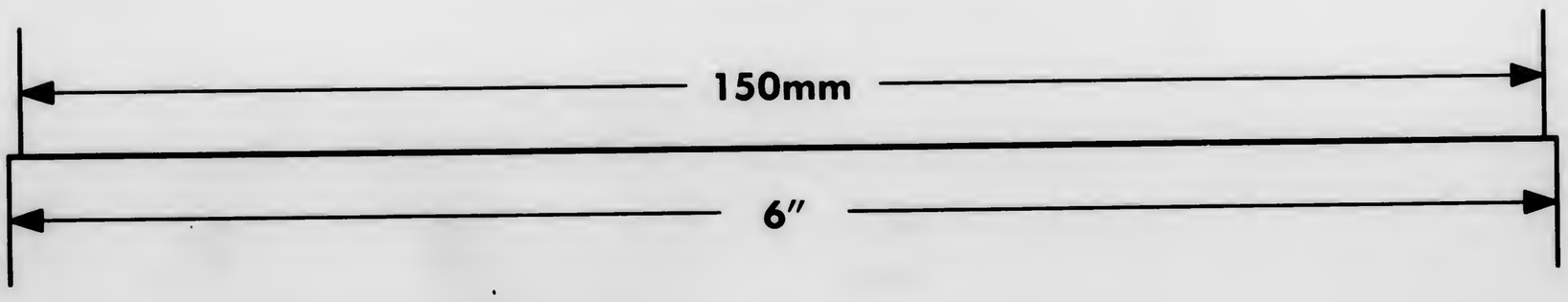

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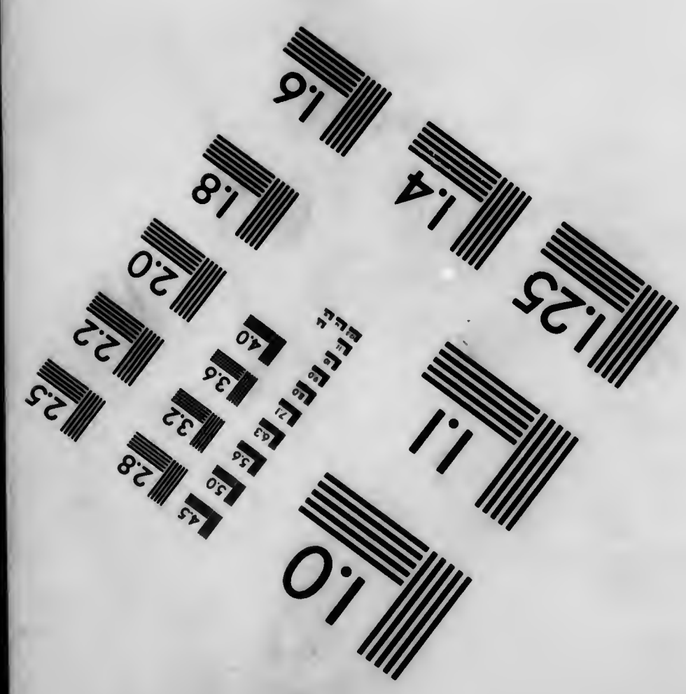

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STREAM FLOW RECORDS

For the Water Year

OCTOBER 1, 1927, TO SEPTEMBER 30, 1928.

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STREAM FLOW RECORDS
of
PENNSYLVANIA
FOR THE WATER YEAR
OCTOBER 1, 1927, TO SEPTEMBER 30, 1928.

STREAM GAGING, FLOOD WARNING AND PRECIPITATION

This volume, containing records for the year ending September 30, 1928, is the seventh of a series of publications presenting stream flow records of Pennsylvania to be issued under separate cover. All previous records may be found in the Stream Flow Records of Pennsylvania for the years 1922-1927, and the Annual Reports of the Water Supply Commission of Pennsylvania for the period 1910-1921.

STREAM GAGING

At the beginning of the year seventy-nine stream gaging stations were being operated by the State. Six of them were equipped with automatic water stage recorders that had been installed chronologically on Loyalsock Creek at Loyalsock, Shenango River at Sharon, Brandywine Creek at Chadds Ford, Little Schuykill River at Tamaqua, Schuylkill River at Norristown and Perkiomen Creek at Graters Ford. The Sharon and Graters Ford Stations were supplied with modern appliances by the Department of Forests and Waters, while the other four were improved through cooperative arrangements with state, municipal or private authorities particularly interested in the stream flow at those stations.

During the year no additional stations were established and none were discontinued. Four additional stations were supplied with wells, shelters and automatic water stage recorders, making a total of ten such installations at the end of the year. They were constructed on the Susquehanna River at Harrisburg, Frankstown Branch Juniata River at Williamsburg, Youghiogheny River at Connellsville, and the South Branch Codorus Creek near York. The Harrisburg installation was made by the Department of Forests and Waters, while the others were made possible through cooperative arrangements.

This volume contains stream flow records for eighty-five gaging stations. Descriptions of stations, daily mean gage heights and cur-

rent meter discharge measurements are published for all stations. Tables of daily and monthly discharge, summary of run-off in second-feet per square mile, run-off depth in inches, precipitation and per cent run-off to precipitation are given for those stations having a satisfactory rating.

The average precipitation for the State during the water year was 52.56 inches or 9.86 inches more than the yearly mean for the 41 years ending September 30, 1928. During four months in the year there were deficiencies ranging from 0.30 to 1.75 inches, while in the other eight months there were excesses in precipitation that ranged from 0.76 to 3.86 inches. Excepting the year ending September 30, 1890, it was the largest amount recorded for any water year since 1887, when extensive and systematic observations were begun. It was only 0.73 inch below that for the water year 1889-1890, when the maximum for the 41 years was recorded and 20.90 inches more than in 1923-1924, the minimum year for the period.

The yearly mean flows for the primary streams in the State ranged from 22 to 71 per cent above the means for the water years 1910 to 1928 inclusive. They were from 100 to 163 per cent above the lowest years for the period and from 19 per cent below to 50 per cent above the previous high years. The yearly mean flow in the Youghiogheny River at Connellsville was the only one that had been previously exceeded during the 19 years.

In general, the hydrographs for the streams in the State showed frequent crest stages between October 3 and August 10, with many following the preceding one before the stream had receded to normal conditions.

Using the Susquehanna River at Harrisburg for example, where the drainage area is 24,100 square miles, equivalent to an area of over 53 per cent of the total for the State, there were 33 increases in stage in 311 days or at average intervals of less than 9.5 days, that enhanced the discharge from about 30 to 300 per cent. The mean yearly discharge for the Harrisburg Station was 42 per cent above the mean for the years 1891 to 1928, inclusive. It was 134 per cent above the minimum for the 38 years in 1923 and 4 per cent below the maximum in 1891.

October was an unusual month with the average temperature and precipitation both above the normal. The temperature excess was moderate and fairly uniform. The highest recorded was 99 degrees at Carlisle, Cumberland County, on the 1st and was a new State record for the month. The excess in rainfall was large, excepting in a few northwestern counties where there were slight deficiencies. A large number of stations recorded amounts more than twice their October normals. The greatest monthly amount reported was 11.91

inches for Paupack, Pike County, which was also a new State record for the month. The lowest monthly amount recorded was 1.58 inches at Sharon, Mercer County, while at Pottsville, Schuylkill County, there was 3.84 inches on the 3d-4th, which was the greatest in any 24 consecutive hours in October.

The low stages that prevailed in the primary streams of the State in September 1927, and resulted in the lowest flows for the water year ending with that month, excepting in the Delaware River, extended into the early part of October, with lowest flows in several of the streams for the water year ending September 30, 1928. The low flows for the year were well above the minimum discharge on record, as presented in the following table, which shows the lowest discharge reached during the year and the minimum discharge recorded.

TABLE NO. I.

Lowest discharge during the year ending September 30, 1928, and minimum discharge recorded.

Location	Stream	Lowest discharge during the year	Minimum discharge recorded
Bethlehem	Lehigh River	480 October a	160 October 1910
Riegelsville	Delaware River	2,600 October a	870 September 1908 a
Reading	Schuylkill River	245 October a	115 August 1923 a
Wilkes-Barre	North Branch Susquehanna River	1,450 October b	820 September 1913
Williamsport	West Branch Susquehanna River	840 October	382 September 1913
Newport	Juniata River	640 September	260 August 1925
Harrisburg	Susquehanna River	4,640 October	2,330 September 1900
Kittanning	Allegheny River	1,100 September	570 September 1913
Avonmore	Kiskiminitas River	375 September	60 September 1908
Connellsville	Youghiogheny River	128 October	11 September 1908 October 1910

a Not including flow in the canal.
b Estimated from Towanda and Danville.

It is unusual to have the yearly extremes of flow in the same month; however, the minimum and maximum discharge for a number of the streams were recorded in October. There were four distinct and rather general rainfalls in the month at five day intervals, being centered on about the 3d, 8th, 13th, and 18th. The stream flows, with but few exceptions, were enhanced by the first, third and fourth storm with their quantities in discharge increasing chronologically.

The first rainfall in October followed a two months period of deficiency in precipitation and all of the stream flows, excepting those in the Beaver Basin, were increased to larger supplies than had been available for one to three months. Nearly half of the rainfall occurred during the last storm in the month and several of the streams reached their highest flow for the year at that time. None of the previous high stages in the primary streams of the State were

attained or even approached, as shown by the following table, which presents the highest stages reached during the year and the maximum stages recorded.

TABLE NO. II.

Highest stage reached during the year ending September 30, 1928, and maximum stages recorded.

Location	Stream	Highest stage during the year	Maximum stage recorded
Bethlehem	Lehigh River	14.0 June	25.9 February 1902
Riegelsville	Delaware River	21.3 October	35.9 October 1903
Reading	Schuylkill River	9.8 June	23.0 September 1850
Wilkes-Barre	North Branch Susquehanna River	24.7 October	33.1 March 1865
Williamsport	West Branch Susquehanna River	17.9 June	33.5 June 1889
Newport	Juniata River	17.6 May	35.9 June 1889
Harrisburg	Susquehanna River	14.6 May	26.8 June 1889
Kittanning	Allegheny River	24.0 February a	30.4 March 1913
Avonmore	Kiskiminitas River	25.1 October	33.8 March 1907
Lock No. 4	Monongahela River	32.5 May b	45.2 July 1888 b
Connellsville	Youghiogheny River	13.7 May	20.5 March 1924

a Stage—discharge relation affected by ice.
b United States Weather Bureau record.

The month of November was unusually warm and the precipitation was excessive. The temperature was above normal on 19 days and at Clearfield, Clearfield County, 85 degrees was recorded on the 1st, which established a new high record for the month in Pennsylvania. Minimum temperatures for the month were recorded at most stations during a short period from the 19th to 21st inclusive, but they were not sufficiently low to have any effects on stream flow.

Rains were of frequent occurrence in November, there being an average of 14 days with precipitation. The mean for the month was over 2.0 inches above normal; however, the excessive rainfall was due chiefly to three periods of heavy rains. The first occurred on the 3d and 4th, the second period on the 17th and 18th and the last from the 27th to the 29th of the month. During the second period of heavy rains there were many severe local storms. The monthly totals ranged from a maximum of 11.36 inches at Bedford, Bedford County, to a minimum of 2.21 inches at Harrisburg, Dauphin County.

The greatest amount recorded in any 24 consecutive hours was 3.24 inches at Lansford, Carbon County, on the 17th-18th. In general the stream flows were increased by each of the three storm periods, although there were no unusual stages except in the Delaware, North Branch Susquehanna and Ohio Rivers.

The temperature in December was mostly mild. The cold periods were of short duration and not severe. In most parts of the State the lowest temperatures were recorded on the 9th and 10th when they averaged from 10 to 15 degrees below normal. Ice effects on stream flows, at gaging stations with larger drainage areas, were

practically negligible, while at others they existed for only short periods and were not serious.

The precipitation in December averaged about one and a quarter inches above normal, but the snowfall was only half the usual amount. Somewhat general storms were centered on about the 3d, 8th, 12th, 16th, and 30th of the month, but the increase in stream flows resulting from them were erratic and incomparable, due to the formation and distribution of the precipitation. The monthly record of 8.93 inches for Grove City, Mercer County, had been exceeded in Pennsylvania, during the month of December, only twice in 40 years. The lowest amount recorded was 2.16 inches at Centre Hall, Centre County, while 2.94 inches fell at Grove City in 24 hours on the 13th.

As a whole January was a mild month. A large temperature excess accumulated from the 6th to the 15th with cold periods near the beginning and end of the month. In general, the flows in small streams were affected by ice during the cold periods which were of short duration, while backwater effects on the large streams were slight. The precipitation for the month was one and a quarter inches below normal and the average snowfall for the State as a whole was less than two-thirds the usual amount. It was extremely light in some of the northern, western and southwestern counties, while at Corry, Erie County, the total monthly snowfall was 31.7 inches, being the third largest amount recorded during the winter. In general, the stream flows did not change materially and it was the first month in the 1928 Report period that there had not been a series of marked fluctuations in stage following closely to each other.

February as a whole was comparatively mild. The coldest periods were of short duration on about the 20th and 26th, while during the remainder of the month the temperatures were near or somewhat above normal. With but few exceptions, the only effects of temperatures on stream flows were during the first few days in the month and they were caused chiefly by ice that formed during the cold period of several days in the latter part of January.

The precipitation for February was about three-quarters of an inch above normal, although the snowfall was considerably less than the usual amount. The heaviest snowfall occurred on the Pocono Plateau and along the westerly slope of the Allegheny Mountains. The greatest monthly amount of precipitation was 5.39 inches at Creekside, Indiana County, while the least, 1.62 inches, fell at Erie, Erie County. In general, the stream flows were materially increased on four occasions during the month, but the only unusual stage was in the Allegheny River at Kittanning which was the result of backwater from an ice gorge.

March was nearly a normal month in both temperature and precipitation, there being a slight deficiency in both elements. The coldest period was from the 4th to the 6th, but during that time no unusually low temperatures for the season were recorded and, with the exception of the Allegheny River at Kittanning, the effects of ice on stream flows were practically negligible. The precipitation was comparatively light during the first eight days of the month and, with but few exceptions, it was not until about the 13th that the streams showed any increase in discharge. On the 17th and 18th there was an unusually heavy snowfall and from the 24th to the 26th there was a decidedly mild period with temperatures 20 degrees or more above normal. The snow melted rapidly and little remained by the night of the 26th. The total snow and sleet deposit for the month averaged about 50 per cent above the March normal. The greatest monthly snowfall was 39 inches at Elk Lick, Somerset County, which was the largest monthly amount recorded during the winter. The greatest monthly precipitation was 5.45 inches at Elk Lick, and the least, 1.65 inches at Ansonia, Tioga County.

The month of April averaged considerably below normal in temperature and well above in precipitation. The first week was warm, with temperature well up in the eighties at several stations, but the last three weeks were almost continuously subnormal, with frosts and freezing temperatures, but they were not sufficiently low or of long enough duration to have any effect on stream flows.

One of the greatest snowfalls on record, not only for April, but for all months, occurred on the 27th and 28th in extreme eastern Kentucky, the mountains of North Carolina, portions of West Virginia, and southwestern Pennsylvania. The area of heavy snowfall extended from Asheville, North Carolina, to west central Pennsylvania, a distance of 400 miles. One station in West Virginia reported 40 inches of snowfall, several reported 30 inches or more, and about 20 inches covered nearly one-half of the State. The largest amount reported in Pennsylvania was 36 inches. It was reported as being the worst snowstorm ever experienced in Pittsburgh so late in the year, and probably the worst for the southwestern part of the State.

The average precipitation for April was 5.50 inches. It was more than two and one-half times the normal amount and established a new record for the month in Pennsylvania, the previous high record being 5.41 inches in 1901. The average snowfall was not the greatest on record for the month, although it was more than twice the normal amount. The greatest monthly snowfall was 38.5 inches at Somerset, Somerset County, which was the second largest amount

recorded during the winter. The greatest monthly amount of precipitation was 9.82 inches at Somerset, while the least, 2.11 inches, fell at Sharon, Mercer County. The greatest amount recorded in any 24 consecutive hours was 4.08 inches at Somerset during the snowstorm of the 27th-28th.

May as a whole was cold and dry, there being deficiencies in both temperature and rainfall reported from all parts of the State. The average precipitation for the month was 2.23 inches or one and three quarter inches below normal. With but few exceptions, the rainfall for the month occurred after the 16th. The greatest monthly total was 5.10 inches at York Haven, York County, and the least 0.65 inch at Erie, Erie County, while on the 17th 3.00 inches fell at Franklin, Venango County.

In June the temperatures were almost constantly below normal throughout the month and the precipitation was the greatest for any June during the last forty years. The average rainfall for the State was more than twice the usual amount. The greatest monthly total was 13.14 inches at West Chester, Chester County, where 4.80 inches fell in 24 hours on the 6th. The lowest amount recorded during the month was 3.96 inches at Erie, Erie County.

The temperatures for July averaged slightly above the normal with no unusual extremes. The rainfall was about 25 per cent more than the monthly average and was occasioned chiefly by heavy local storms. The monthly totals ranged from a maximum of 11.81 inches at Quakertown, Bucks County, to a minimum of 2.37 inches at Philadelphia. The greatest amount recorded in any 24 consecutive hours was 4.68 inches at Quakertown on the 13th and 14th.

With but two exceptions, 1901 and 1918, it was the warmest August during the last 41 years, yet the maximum temperature for the State was only 99 degrees. The average precipitation was slightly above the normal. The greatest monthly amount was 10.87 inches at Hawley, Wayne County, while the lowest was 1.32 inches at Beaver Falls, Beaver County. The greatest amount recorded in any 24 consecutive hours was 5.28 inches at Coatesville, Chester County, on the 16th-17th.

In contrast with the pleasant conditions that usually prevail during September, there was much cold and disagreeable weather. The precipitation for the month was only two-thirds the normal amount and no unusual monthly or daily rainfalls were recorded. As a whole the streams gradually receded throughout the month.

The yearly mean discharges in the three principal basins of the State have been compared with the mean discharges for the 19 years

ending September 30, 1928, and with the minimum and maximum yearly mean discharges for the period.

In the Delaware Basin, as represented by the Delaware River at Riegelsville, the yearly mean discharge was 71 per cent more than the mean for the 19 years; 139 per cent more than in 1923, the minimum year for the period, and 50 per cent above the previous high means for the period in 1916 and 1920. At Bethlehem on the Lehigh River, the mean was 69 per cent more than that for the 19 years; 159 per cent above the minimum which occurred in 1923, and 49 per cent above the previous high mean in 1922.

The yearly mean discharge in the Susquehanna Basin, as represented by the North Branch Susquehanna River at Danville, was 56 per cent more than the mean for the 19 years; 138 per cent more than the minimum in 1923 and 20 per cent above the previous high mean for the period in 1916. At Williamsport on the West Branch Susquehanna River, the mean discharge for the year was 51 per cent more than the mean for the 19 years; 142 per cent more than the minimum in 1925, and 17 per cent above the previous high mean in 1927. The mean discharge for the Juniata River at Newport was 50 per cent more than the mean for the 19 years; 156 per cent above the minimum in 1925 and 6 per cent more than the previous high mean for the period in 1924. At Harrisburg on the Susquehanna River, the mean discharge was 49 per cent more than the mean for 19 years; 134 per cent more than the minimum in 1923 and 13 per cent above the previous high mean in 1916.

In the Ohio Basin as represented by the Allegheny River at Kittaning, the mean discharge for the year was 37 per cent more than the mean for the 19 years; 100 per cent above the minimum in 1925 and 6 per cent more than the previous high mean for the period in 1927. At Connellsville on the Youghiogheny River the yearly mean was 22 per cent more than the mean for the 19 years (not including 1919, when the year was not complete); 163 per cent above the minimum in 1925 and 19 per cent below the maximum in 1912.

FLOOD WARNING

During the water year ending September 30, 1928, there were five more predictions for high stages in the Susquehanna Basin than for any year since 1913, when the State forecasting service was inaugurated. None of the previous high discharge records were exceeded or even approached in the large streams. The only ice gorge of sufficient magnitude to create backwater to an unusual height was in the Allegheny River below Kittanning.

Moderate precipitations in the early part of October saturated the soil sufficiently for heavy rains, which ranged from 2.5 to 5.5 inches on some drainage areas between the 16th and 20th, to result in the highest flows during the year in some of the Pennsylvania streams.

In the Delaware Basin, the Delaware River rose 15 feet at Riegelsville to a gage height of 21.3 feet on October 20th, which was the highest stage at that locality during the year. It was 2.9 feet lower than in October 1924, when the highest stage in recent years occurred, and 14.6 feet below the maximum recorded height in October 1903. The Lehigh River at Bethlehem rose 7.5 feet to gage height 10.8 feet and the Schuylkill River at Reading increased 5.0 feet to gage height 6.7 feet, which were not unusual gage heights in either stream; however, they were at their highest stages since November 1926.

In the Susquehanna Basin, before a large percentage of the heavy rainfall had reached the streams in the head waters of the North Branch Susquehanna River, it was predicted on October 19th that a stage of 15 feet would be reached at Towanda, 22 feet at Wilkes-Barre and 17.5 feet at Danville. Morning reports of the 20th showed that the estimated stages of the previous day, for the upper reaches of the North Branch Susquehanna River, had been exceeded and final predictions were made which are shown in the following table together with the actual stages that occurred.

TABLE NO. III.

Predicted and Actual Stages, in feet, reached October 19-21, 1927.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	16.0	16.6
Corning	Chemung River	11.0	10.3
Towanda	North Branch Susquehanna River	17.5	17.3
Wilkes-Barre	North Branch Susquehanna River	25.0	24.7
Danville	North Branch Susquehanna River	20.0	19.9
Bower	West Branch Susquehanna River	10.0	11.2
Clearfield	West Branch Susquehanna River	5.5	a
Renovo	West Branch Susquehanna River	9.0	7.0
Lock Haven	West Branch Susquehanna River	10.0	8.8
Williamsport	West Branch Susquehanna River	10.0	8.8
Sunbury	Susquehanna River	13.0	12.8
Newport	Juniata River	16.0	15.9
Harrisburg	Susquehanna River	14.5	14.55

a Not determined.

During this flood the North Branch Susquehanna River rose 19.8 feet at Wilkes-Barre, the West Branch increased 7.2 feet at Williamsport and the Juniata River rose 11.5 feet at Newport. The Susquehanna River rose 9.6 feet at Sunbury and 9.5 feet at Harrisburg. The North Branch Susquehanna River was at its highest stage during the

year and, with the exception of 1925, it was the highest since March 1920. It was only 0.4 foot lower than in February 1925, 1.3 feet lower than in March 1920, and 8.4 feet below the maximum stage recorded in March 1865.

The West Branch Susquehanna River was not unusually high at the time of this flood and the Juniata River at Newport was 1.7 feet lower than in May when the stage at that station was highest during the year. The Susquehanna River at Sunbury reached its highest stage for the year although it was only 0.1 foot higher than in May, while at Harrisburg it was 0.1 foot lower than in May when the highest stage for the year occurred at that locality.

In the Ohio Basin the Allegheny River, above the mouth of the Kiskiminitas River, rose only 4.2 feet at Kittanning. The Kiskiminitas River increased 20.9 feet at Avonmore to gage height 25.1 feet which was the highest in that stream during the year. It had not been exceeded since March 1912 when it was 28.0 feet, the highest stage on record being 33.8 feet in March 1907.

The Monongahela River rose 12.9 feet at South Brownsville to gage height 25.4 feet which was not an unusual stage in that stream. At Connellsville the Youghiogheny River increased 11.8 feet to a stage of 13.2 feet, which was only 0.5 foot lower than in May when the highest stage for the year was recorded.

The Ohio River at Pittsburgh rose 11.4 feet to gage height 22.2 feet which was the highest at that station since March 1927, although it was 2.8 feet below flood stage. In the Beaver Basin there were not any material changes in stream flows during the entire month of October.

In general, there were three periods of heavy rain in November that increased the stream flows to crest stages on about the 4th, 19th and 29th of the month. In the Delaware Basin the streams were most affected by the second storm. The Delaware River at Riegelsville rose from 6.2 feet on the 17th to 17.6 feet on the 19th, while in the Pennsylvania streams, tributary to the Delaware River, there were no unusual stages and the increases in gage heights were within a range of from 2 to 7 feet during the entire month.

In the Susquehanna Basin, the North Branch Susquehanna River and its tributaries were the only streams to reach unusual stages. The first storm in the month did not enhance the flows to flood heights. The second increased the North Branch Susquehanna River 12.8 feet at Wilkes-Barre on the 17th-18th and the Susquehanna River rose 5.3 feet at Harrisburg on the 17th-20th.

The following table shows the predicted stages and those which actually occurred:

TABLE NO. IV.

Predicted and Actual Stages, in feet, reached November 18-20, 1927.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	12.0	10.4
Corning	Chemung River	14.0	13.4
Towanda	North Branch Susquehanna River	13.5	13.6
Wilkes-Barre	North Branch Susquehanna River	20.0	18.8
Danville	North Branch Susquehanna River	16.0	15.0
Sunbury	Susquehanna River	10.0	9.8
Harrisburg	Susquehanna River	10.5	10.4

The third storm in November had more effect on the West Branch Susquehanna River than either of the two previous ones, while the Juniata River at Newport did not rise over four feet at any time in the month, when other streams were at high stages. The North Branch Susquehanna River rose 7.9 feet at Wilkes-Barre on the 25th-29th, the West Branch increased 7.6 feet at Williamsport on the 24th-30th and the Susquehanna River rose 4.3 feet at Harrisburg on the 26th-30th.

The table that follows shows the predicted stages and those which actually occurred:

TABLE NO. V.

Predicted and Actual Stages, in feet, reached November 28-30, 1927.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	11.0	10.7
Corning	Chemung River	10.0	9.4
Towanda	North Branch Susquehanna River	11.5	11.3
Wilkes-Barre	North Branch Susquehanna River	17.0	15.6
Danville	North Branch Susquehanna River	13.5	13.3
Bower	West Branch Susquehanna River	10.0	9.6
Clearfield	West Branch Susquehanna River	5.5	a
Renovo	West Branch Susquehanna River	9.0	8.8
Lock Haven	West Branch Susquehanna River	11.0	10.7
Williamsport	West Branch Susquehanna River	11.0	11.7
Sunbury	Susquehanna River	9.5	9.8
Harrisburg	Susquehanna River	10.0	10.2

a Not determined.

In the Ohio Basin the Allegheny River was not materially affected by the first storm in November as there was a rise of only 3 feet in the stream. The second and third storms increased the Allegheny River at Kittanning from 5.2 feet on the 16th to 18.7 feet on the 18th and from 11.4 feet on the 27th to 17.4 feet on tht 29th but neither of the high stages reached were unusual in that stream. The Kiskiminitas River at Avonmore rose from 4.1 feet on the 2d to 12.6 feet on the 4th, while the second storm in November had no material

effect on the stream as it increased only 1.7 feet at that locality. It rose from 5.3 feet on the 26th to 14.6 feet on the 28th, but neither of the high stages in the month were of uncommon occurrence in the stream.

The Monongahela River had five distinct increases in stage at South Brownsville during the month of November that were centered on about the 5th, 10th, 18th, 26th and 29th. The advances in gage heights ranged from 2.5 to 6.5 feet and none of the crest stages were of unusual heights in that stream. Increases in the Youghiogheny River stage at Connellsville were somewhat in step with those in the Monongahela River, though the fluctuations were marked to a lesser degree and the heights attained were of common occurrence.

In November the Ohio River at Pittsburgh rose from 12.4 feet on the 16th to 21.4 feet on the 19th and from 15.6 feet on the 27th to 23.1 feet on the 29th, the latter being 0.9 foot higher than in October and the highest stage in the stream since March 1927. The Shenango River at Sharon rose about three feet to a gage height of 5.6 feet between the 16th and 18th, which was the first appreciable increase in that stream since the 23d of July 1927. In the latter part of the month the stream rose to 6.3 feet on the 28th which was the highest stage at Sharon since May 27, 1927.

In the Delaware Basin the streams rose to their highest stages in December on the 8th and 9th with no other increases of importance during the month. The Delaware River at Riegelsville rose from 8.3 feet on the 7th to 18.6 feet on the 9th, which was the third highest stage in that stream during the year. The Lehigh River at Bethlehem rose from 3.9 feet on the 7th to 9.7 feet on the 8th, while the Schuylkill River at Reading increased from 2.2 to 8.5 feet during the same period of time, but the stages in both streams were well below flood heights.

Hydrographs for the Susquehanna Basin streams show four distinct crests between the 1st and 18th of December, resulting from four general storms. The first rise in the streams followed the high stages in the latter part of November before they had receded but a few feet and such was also the case precedent to each succeeding rise. The high stages in the Susquehanna Basin were centered on about the 2nd, 9th, 15th and 17th of the month. At the time of the first flood in December, the North Branch Susquehanna River and its tributaries were the only streams materially affected. During the three following freshets, the West Branch Susquehanna River reached noteworthy stages though they were well below flood heights. The Juniata River did not reach an unusual stage during the entire month.

The stage of the Chemung River at Corning was 14.9 feet on December 1st and, in anticipation of an increased flow in the North Branch Susquehanna River at Binghamton, it was estimated that there would be a stage of 15 feet at Towanda, 22 feet at Wilkes-Barre and 17.5 feet at Danville. On the following morning it was obvious from the gage heights that the precipitation on the upper part of the North Branch Susquehanna River Basin had been in the form of snow, as the streams at Binghamton, Corning and Towanda were receding. The expected rise at Binghamton did not materialize and final predictions were made as shown in the following table, which also presents the actual stages reached.

TABLE NO. VI.

Predicted and Actual Stages, in feet, reached December 1-3, 1927.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	10.0	7.4
Corning	Chemung River	15.0	14.9
Towanda	North Branch Susquehanna River	11.5	11.2
Wilkes-Barre	North Branch Susquehanna River	17.0	16.0
Danville	North Branch Susquehanna River	13.5	13.6
Sunbury	Susquehanna River	9.0	9.0
Harrisburg	Susquehanna River	9.5	9.8

Before the streams in the Susquehanna Basin had receded to normal stages, there were three more freshets that took place at intervals of about 7, 6 and 2 days respectively.

The following tables show the predicted stages and those which actually occurred:

TABLE NO. VII.

Predicted and Actual Stages, in feet, reached December 8-10, 1927.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	10.0	10.6
Corning	Chemung River	10.0	9.2
Towanda	North Branch Susquehanna River	11.0	11.0
Wilkes-Barre	North Branch Susquehanna River	16.5	15.2
Danville	North Branch Susquehanna River	13.5	13.2
Williamsport	West Branch Susquehanna River	10.0	10.1
Sunbury	Susquehanna River	9.5	9.4
Harrisburg	Susquehanna River	10.0	10.5

TABLE NO. VIII.

Predicted and Actual Stages, in feet, reached December 14-16, 1927.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	10.0	10.0
Corning	Chemung River	10.0	10.5
Towanda	North Branch Susquehanna River	11.0	10.9
Wilkes-Barre	North Branch Susquehanna River	16.5	15.2
Danville	North Branch Susquehanna River	13.5	12.6
Bower	West Branch Susquehanna River	11.0	11.4
Clearfield	West Branch Susquehanna River	6.5	7.3
Renovo	West Branch Susquehanna River	10.0	10.7
Lock Haven	West Branch Susquehanna River	13.0	12.5
Williamsport	West Branch Susquehanna River	14.0	13.3
Sunbury	Susquehanna River	10.0	10.5
Harrisburg	Susquehanna River	11.0	10.6

TABLE NO. IX.

Predicted and Actual Stages, in feet, reached December 16-18, 1927.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	9.0	8.0
Corning	Chemung River	9.0	9.0
Towanda	North Branch Susquehanna River	10.0	10.1
Wilkes-Barre	North Branch Susquehanna River	15.0	13.6
Danville	North Branch Susquehanna River	12.0	12.6
Bower	West Branch Susquehanna River	10.0	10.0
Clearfield	West Branch Susquehanna River	5.5	5.8
Renovo	West Branch Susquehanna River	10.0	10.4
Lock Haven	West Branch Susquehanna River	13.0	13.0
Williamsport	West Branch Susquehanna River	14.0	14.0
Sunbury	Susquehanna River	10.0	10.2
Harrisburg	Susquehanna River	10.5	10.8

On the last day of November nearly two inches of rain fell over the upper reaches of the Allegheny River drainage on a saturated soil and the stream quickly rose to flood stage. Excepting the Ohio and Beaver Rivers, none of the other primary streams in the Ohio Basin were materially affected. The Allegheny River at Kittanning rose to 22.0 feet on the 1st of December before it had receded over 1.4 feet from a crest stage of 17.4 feet on the 29th of the previous month. The gage height was 2.0 feet lower than in February, when the stage-discharge relation was affected by ice, but the discharge was highest during the year and had not been reached since March 1920 when the stage was 26.4 feet.

The Ohio River at Pittsburgh rose to a gage height of 23.0 feet, which was 2.0 feet below flood stage, on the 2nd of December before it had receded over 2.8 feet from a crest stage of 23.1 feet on the 29th of November. The Shenango River at Sharon rose from 5.5 feet on the 30th of November to 12.3 feet on the 2nd of December and

was the highest stage in that stream during the year. It was the highest stage at Sharon since March 1920, when it was 13.3 feet and was 6.3 feet lower than in March 1913 when the maximum gage height was recorded.

During the early part of December there was sufficient rainfall to maintain rather high flows in the Ohio Basin streams. From the 7th to the 21st there were only two or three days without precipitation, with the heaviest fall from the 11th to the 14th and several of the streams exceeded flood stages. The Allegheny River at Kittanning increased from 7.2 feet on the 11th to 21.8 feet on the 14th which was only 0.2 foot lower than on the first day of the month, when the highest free flow stage for the year was reached. The Kiskiminitas River at Avonmore rose from 6.4 feet on the 11th to 18.0 feet on the 14th which was not a stage of unusual annual occurrence in recent years.

The Monongahela River at South Brownsville increased from 12.8 feet on the 11th to 32.0 feet on the 14th which was a stage that had been exceeded in 8 of the preceding 12 years. At Connellsville the Youghiogheny River rose from 3.8 feet on the 11th to 11.0 feet on the 14th which was not an exceptionally high stage in that stream.

The Ohio River at Pittsburgh increased from 13.3 feet on the 11th to 30.4 feet on the 14th, which was 5.4 feet above flood stage and the highest at that station during the year. With the exception of January and March 1924, when stages of 30.6 and 32.4 feet were reached, it was the highest since February 1915 when 31.6 feet was recorded. Correcting the March 1907 gage height for the change in gage datum on March 1, 1926, the December 14, 1927, stage was 8.3 feet lower than in March 1907, which was the highest stage on record since March 1763. At Sharon the Shenango River rose from 3.5 feet on the 11th to 10.8 feet on the 14th which was a stage rarely exceeded in that stream.

In January there were no unusual stages at the Pennsylvania gaging stations excepting at Kittanning on the Allegheny River, where there was a gage height of about 20 feet from the 7th to the 10th and on the 25th and 26th caused by backwater from an ice gorge.

There were several well defined storms in February with sufficient rainfall to materially increase the stream flows, but the amount, character, distribution and times of precipitation, were such that there were no consistencies in the magnitudes of enhanced discharge or times when they occurred. In the Delaware Basin the streams rose several feet on about the 8th, 15th, and 23d, but there were no unusual stages in any of those streams.

In the Susquehanna Basin there were noteworthy increases in stream flow, in the primary streams, on about the 5th, 10th, 16th and 25th of

February. The midmonth flows reached the highest stages and the North Branch Susquehanna River and its tributaries were the most affected. The West Branch Susquehanna River hydrograph for the month was comparable with that for the North Branch, with fluctuations marked to a lesser degree, while the Juniata River changes were within a range of 3 feet during the entire month.

The North Branch Susquehanna River rose 8.5 feet at Wilkes-Barre, the West Branch increased 5.5 feet at Williamsport and the Susquehanna River rose only 1.1 feet at Harrisburg.

The following table shows the predicted stages and those which actually occurred:

TABLE NO. X.

Predicted and Actual Stages, in feet, reached February 15-17, 1928.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	9.0	7.9
Corning	Chemung River	11.0	10.9
Towanda	North Branch Susquehanna River	10.0	9.2
Wilkes-Barre	North Branch Susqueheanna River	16.0	14.3
Danville	North Branch Susquehanna River	13.0	10.8
Bower	West Branch Susquehanna River	9.0	9.5
Clearfield	West Branch Susquehanna River	5.0	4.7
Renovo	West Branch Susquehanna River	9.0	5.9
Lock Haven	West Branch Susquehanna River	11.0	15.4 a
Williamsport	West Branch Susquehanna River	10.0	9.2
Sunbury	Susquehanna River	9.0	7.8
Harrisburg	Susquehanna River	9.5	8.5

a Affected by ice.

During this freshet the West Branch Susquehanna River reached its highest stage during the year at Lock Haven. As represented by the discharge at Renovo, the height would not have been expected to exceed 10 feet if it had not been augmented by backwater from an ice gorge. It was 9.7 feet below the ice flood of 1923, 11.4 feet below that of 1918 and 14.4 feet lower than in June 1889 when the highest stage at that city was recorded.

In the Ohio Basin the stream flows in the Allegheny River and its tributaries were increased on about the 6th, 9th, 16th and 26th of February. No exceptionally high stage was recorded except in the Allegheny River at Kittanning, where a gage height of 24.0 feet was reached on the 9th as a result of backwater from an ice gorge. As indicated by the discharge at Franklin, it would not have been expected to exceed 11.5 feet if the backwater condition had not existed. It was the highest stage at Kittanning during the year and had not been exceeded since March 1920, when it was 2.4 feet higher. It was 6.4 feet lower than in March 1913, when the maximum stage was recorded.

In February the Kiskiminitas River rose to crest stages at Avonmore on the 5th, 9th 15th and 24th with highest flow on the 5th, when

a gage height of 17.2 feet was reached. The second highest stage in the month was 13.6 feet on the 15th. The Monongahela River at South Brownsville reached 18.0 feet on the 10th, 16.4 feet on the 15th and 18.1 feet on the 24th, while the Youghiogheny River at Connellsville reached crest stages on the 6th, 9th, 15th and 24th with the highest discharge on the 15th when a gage height of only 6.4 feet was attained.

The Ohio River rose to 19.7 feet at Pittsburgh on the 9th of February, which was the highest stage at that city during the month. The dates of crest stages in the Youghiogheny River at Connellsville and the Shenango River at Sharon were coincident, which is probably of rare occurrence considering the remote location of drainage areas and the general direction of the stream courses. A stage of 10.2 feet was reached at Sharon on the 9th which was the highest at that station during the month and a gage height that had not been annually exceeded more than three times since 1920.

Warm rains and high temperatures in March did not result in the usual high stages for the year owing to the lack of accumulated ice and snow on the drainage basins. There were not any noteworthy changes in the Pennsylvania streams tributary to the Delaware River and there was a rise of less than 4.5 feet in the parent stream during the month.

In the Susquehanna Basin there were marked increases in flow on about the 15th, 27th, and 31st of March. Those on about the 27th were highest in the North Branch Susquehanna River and on about the 31st in the West Branch Susquehanna, Juniata and Susquehanna Rivers. At the time of the high stages on March 26th-28th, the North Branch Susquehanna River rose 11.6 feet at Wilkes-Barre, the West Branch increased 7.1 feet at Williamsport and the Susquehanna River rose 4.9 feet at Harrisburg.

The following table shows the predicted stages and those which actually occurred:

TABLE NO. XI.

Predicted and Actual Stages, in feet, reached March 26-28, 1928.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	12.0	11.6
Corning	Chemung River	10.0	10.2
Towanda	North Branch Susquehanna River	12.0	12.2
Wilkes-Barre	North Branch Susquehanna River	18.0	17.6
Danville	North Branch Susquehanna River	14.5	13.6
Renovo	West Branch Susquehanna River	8.0	8.0
Lock Haven	West Branch Susquehanna River	9.0	9.4
Williamsport	West Branch Susquehanna River	11.0	11.1
Sunbury	Susquehanna River	9.5	9.7
Harrisburg	Susquehanna River	10.0	10.2

The West Branch Susquehanna River rose to 11.8 feet at Bower on the 30th of March which was the highest gage height at that station during the year, though it was a stage that is annually exceeded by from 0.8 to 2.8 feet two out of three years. It rose to 10.2 feet at Renovo and 12.5 feet at Williamsport on the 31st. The Juniata River rose to 10.8 feet at Newport on the 31st and the Susquehanna River reached 10.3 feet at Harrisburg on the 1st day of April.

In the Ohio Basin the Allegheny River stage at Kittanning ranged from 13.1 to 16.6 feet between the 1st and 13th of March, due to backwater from an ice gorge. It reached 13.8 feet on the 15th, 13.7 feet on the 28th and 14.8 feet on the 31st when the gage heights were true functions of the discharge. The Kiskiminitas River at Avonmore rose to 8.0 feet on the 10th, 11.2 feet on the 14th and 24th and 17.6 feet on the 30th.

The Monongahela River at South Brownsville reached 15.6 feet on the 11th, 21.4 feet on the 23d and 18.6 feet on the 31st, while the high stages in the Youghiogheny River at Connellsville were 5.9 feet on the 10th, 8.4 feet on the 23d and 7.6 feet on the 30th, which were not unusual heights in either stream.

The Ohio River at Pittsburgh rose to 18. 2 feet on the 15th of March and reached 22.6 feet on the 31st, which was only 2.4 feet below flood stage. In the Beaver Basin the Shenango River reached 6.9 feet on the 14th, 6.1 feet on the 27th and 7.4 feet on the 30th, which were heights of common occurrence in that stream.

The highest April stages in the Pennsylvania streams tributary to the Delaware River were, with the exception of the Lackawaxen River, on the 28th of the month. The Schuylkill River reached 6.9 feet at Reading, while the Lehigh River was not materially affected. The Delaware River rose to about 12.5 feet on the 25th which was not an unusual height in that stream.

In the Susquehanna Basin the highest crest stages in April were in the West Branch Susquehanna and Juniata Rivers on the 9th of the month. The West Branch reached 12.2 feet at Williamsport and the Juniata increased to 9.5 feet at Newport which were not exceptional heights in either stream. The highest stages in the North Branch Susquehanna and Susquehanna Rivers were on about the 24th of the month. The North Branch rose 9.6 feet at Wilkes-Barre and the Susquehanna increased 4.7 feet at Harrisburg.

The following table shows the predicted stages and those which actually occurred:

TABLE NO. XII.

Predicted and Actual Stages, in feet, reached April 23-25, 1928.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	10.0	9.0
Corning	Chemung River	10.0	8.8
Towanda	North Branch Susquehanna River	11.0	9.6
Wilkes-Barre	North Branch Susquehanna River	16.5	16.4
Danville	North Branch Susquehanna River	13.5	13.1
Bower	West Branch Susquehanna River	8.0	8.5
Clearfield	West Branch Susquehanna River	4.5	4.4
Renovo	West Branch Susquehanna River	8.0	7.6
Lock Haven	West Branch Susquehanna River	9.0	8.8
Williamsport	West Branch Susquehanna River	11.0	11.0
Sunbury	Susquehanna River	9.5	9.6
Harrisburg	Susquehanna River	10.0	10.4

In the Ohio Basin the Allegheny River at Kittanning was at a gage height of 12.2 feet at the beginning of April and it did not recede below 6.6 feet during the month with crest stages of 11.4 feet on the 10th and 11.1 feet on the 24th. The Kiskiminitas River at Avonmore reached 14.9 feet on the 8th, 11.2 feet on the 12th, 11.4 feet on the 24th and 16.4 feet on the 30th.

The Monongahela River at South Brownsville reached 21.1 feet on the 13th, 19.6 feet on the 25th and rose rapidly from the 27th to the first of May. The Youghiogheny River at Connellsville fluctuated through a range of less than 3.5 feet from the 1st to the 29th inclusive, when it started to rise rapidly to a crest stage on May 1st.

The Ohio River at Pittsburgh rose 5.7 feet to a stage of 18.2 feet on the 25th of April and increased 6.6 feet to gage height 22.2 feet at midnight of the 30th. The Shenango River increased about 3.0 feet at Sharon between the 21st and 23d which was the only material change in that stream during the month.

On about the 1st of May many of the streams attained high stages as a result of unusually heavy rains in the latter part of April. The Juniata, Susquehanna, Monongahela and Youghiogheny Rivers reached their highest gage heights during the year.

There were no high flows in the Pennsylvania streams tributary to the Delaware River in May and the changes in stage in the parent stream at Riegelsville were within a range limit of 7.5 feet.

In the Susquehanna Basin between the 28th of April and the 2d of May, the North Branch Susquehanna River rose 9.8 feet at Wilkes-Barre, the West Branch increased 6.4 feet at Williamsport, the Juniata River rose 10.8 feet at Newport and the Susquehanna River increased 7.6 feet at Harrisburg.

The following table shows the predicted stages and those which actually occurred:

TABLE NO. XIII.

Predicted and Actual Stages, in feet, reached May 1-2, 1928.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	10.0	9.8
Corning	Chemung River	12.0	11.5
Towanda	North Branch Susquehanna River	13.0	13.3
Wilkes-Barre	North Branch Susquehanna River	19.0	20.9
Danville	North Branch Susquehanna River	15.5	16.2
Bower	West Branch Susquehanna River	10.0	10.1
Clearfield	West Branch Susquehanna River	5.5	5.6
Renovo	West Branch Susquehanna River	9.0	8.8
Lock Haven	West Branch Susquehanna River	11.0	11.1
Williamsport	West Branch Susquehanna River	14.0	13.7
Sunbury	Susquehanna River	12.5	12.7
Huntingdon	Frankstown Branch Juniata River	11.0	11.0
Newport	Juniata River	18.0	17.6
Harrisburg	Susquehanna River	14.0	14.65

It was during this flood that the Juniata and Susquehanna Rivers reached their highest flows in the year. With the exception of May 1924, the Juniata River was at its highest stage since March 1920. It was 1.4 feet lower than in May 1924 and 18.3 feet below that of June 1889 when the maximum stage was recorded.

The Susquehanna River at Sunbury was 0.1 foot lower than in October when the maximum stage for the year occurred at that station. At Harrisburg it was at its highest stage since November 1926. It was 0.1 foot higher than in October, 2.4 feet below the height in November 1926, and 12.2 feet lower than in June 1889, when the maximum stage was recorded.

In the Ohio Basin the Allegheny River at Kittanning gradually receded from the first of May until the 18th, when there was a rise of about 4 feet that was followed by another period of gradual recession until the 4th of the following month. The Kiskiminitas River at Avonmore rose from 16.4 feet on the last of April to 20.2 feet on the first of May. It was 4.9 feet lower than in October when the maximum stage for the year was recorded.

At South Brownsville the Monongahela River reached a stage of 33.1 feet on the 1st of May, which was the highest at that station during the year and had not been reached or exceeded since March 1924, when it was 41.7 feet. At Lock No. 4 a stage of 32.5 feet was recorded on May 1st which was only 0.4 foot higher than in January 1927. It was 8.9 feet lower than in March 1924, and 12.7 feet below the maximum stage recorded in July 1888.

The Youghiogheny River at Connellsville reached a stage of 13.7 feet on the first of May and then gradually receded until the 4th of the following month. It was the highest stage at that station during the year and, with the exception of March 1924, it was the highest since

January 1920. The stage was 6.8 feet lower than in March 1924, when the maximum height at Connellsville was recorded and 4.7 feet below that of March 1907, the second highest stage on record.

At Pittsburgh the Ohio River crested at a gage height of 24.9 feet on the 1st of May which was only 0.1 foot below flood stage. It was the sixth out of eight months that the stage at that station had reached from 2.8 feet below to 5.4 feet above flood stage which was an unprecedented record for the Ohio River at that locality.

In the Beaver Basin the Shenango River at Sharon gradually receded from the 1st of May until the 17th, when there was a rise of about 4 feet that was followed by another period of gradual recession until the 4th of the following month.

With the exception of 8 days in June there were rainfalls ranging from 0.50 to 4.80 inches reported from some parts of the State for each day. Some of the streams in the Delaware and West Branch Susquehanna River Basins reached their highest stages during the year.

In general, the Pennsylvania streams tributary to the Delaware River had marked increases in flow on about the 6th, 26th and 30th of June, with their highest stages on the last day of the month. The Lackawaxen River at West Hawley rose from 3.0 feet on the 29th to 10.3 feet on the 30th, which was the highest in that stream during the year and had not been exceeded by over 0.2 foot since May 1921, when the station was established. A stage of 10.5 feet was reached in September 1924, and November 1928.

The Lehigh River at Bethlehem increased from 4.2 feet on the 29th to 14.0 feet on the 30th which was the highest stage in that stream during the year and had been exceeded only twice since February 1902, when the maximum stage was recorded. A stage of 16.2 feet was reached in October 1924, 16.5 feet in November 1926, and 25.9 feet in February 1902, which is the highest stage on record.

The Delaware River at Riegelsville rose from 9 feet on the 29th of June to 18.8 feet at 1 a. m. on July 1st, which was the second highest stage in the year; however, it was only 0.2 foot higher than in December. The Schuylkill River at Reading rose from 3.0 feet on June 29 to 9.8 feet on the 30th which was the highest in that stream during the year and the lowest annual high stage since 1923. It was 6.7 feet lower than in October 1924, when the highest free flow stage since February 1902 occurred. The maximum stage recorded was 23.0 feet in September 1850.

In June there were several well defined crest stages in the Susquehanna Basin streams with the major increases in gage heights existing on about the 7th and 30th. At the time of the first high stages the North Branch Susquehanna River rose 12.3 feet at Wilkes-Barre,

the West Branch increased 15.8 feet at Williamsport and the Susquehanna River rose 7.7 feet at Harrisburg.

The following table shows the predicted stages and those which actually occurred:

TABLE NO. XIV.

Predicted and Actual Stages, in feet, reached June 6-8, 1928.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	10.0	10.3
Corning	Chemung River	10.0	10.2
Towanda	North Branch Susquehanna River	11.0	10.4
Wilkes-Barre	North Branch Susquehanna River	16.5	17.1
Danville	North Branch Susquehanna River	13.5	13.8
Bower	West Branch Susquehanna River	9.5	9.4
Clearfield	West Branch Susquehanna River	5.0	5.7
Renovo	West Branch Susquehanna River	12.0	11.9
Lock Haven	West Branch Susquehanna River	15.0	14.8
Jersey Shore	West Branch Susquehanna River	18.0	a
Williamsport	West Branch Susquehanna River	17.0	17.9
Lewisburg	West Branch Susquehanna River	15.0	a
Sunbury	Susquehanna River	11.5	12.2
Harrisburg	Susquehanna River	12.5	12.1

a Not determined.

It was during this flood that the West Branch Susquehanna River at Williamsport reached its highest stage during the year. It was 3.7 feet lower than in March 1923, when the highest stage in recent years occurred and 15.6 feet below that of June 1889, when the maximum stage was recorded. The Juniata River was not materially affected during the month.

The second highest Susquehanna Basin stages in June were on about the 30th and they followed crest heights of the 27th-28th before the streams had receded more than 2 feet. The North Branch Susquehanna River rose 7.3 feet at Wilkes-Barre, the West Branch increased 5.3 feet at Williamsport and the Susquehanna River rose 3.6 feet at Harrisburg.

The following table shows the predicted stages and those which actually occurred:

TABLE NO. XV.

Predicted and Actual Stages, in feet, reached June 30-July 1, 1928.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	10.0	9.5
Corning	Chemung River	8.0	6.1
Towanda	North Branch Susquehanna River	10.0	9.5
Wilkes-Barre	North Branch Susquehanna River	15.0	16.6
Danville	North Branch Susquehanna River	12.0	14.2
Williamsport	West Branch Susquehanna River	12.0	11.0
Sunbury	Susquehanna River	10.0	10.1
Harrisburg	Susquehanna River	11.0	11.0

In the Ohio Basin the Allegheny River at Kittanning rose from 3.8 feet on the 4th of June to 15.5 feet on the 7th and later reached crest stages of 13.0 feet on the 11th and 14.0 feet on the 25th. At Avonmore the Kiskiminitas River reached 10.2 feet on the 6th, 10.8 feet on the 10th, 10.6 feet on the 19th and 13.3 feet on the 22d.

At South Brownsville the Monongahela River reached 17.0 feet on June 11th and 21.8 feet on the 21st. There was no material change in the Youghiogheny River during the month as the maximum range in stage at Connellsville was within a limit of 3.3 feet.

The Ohio River at Pittsburgh reached 18.9 feet on June 7th and 25th which was the highest stage at that station during the month. In the Beaver Basin the Shenango River at Sharon rose from 2.6 feet on the 4th to 9.2 feet on the 7th, which was the only stage of unusual height in that stream in June.

During July the flows in the Delaware River and its Pennsylvania tributaries were materially increased on the 6th and 14th. There were no exceptionally high stages in any of the streams excepting Perkiomen Creek which rose from 1.9 feet on the 12th to 13.4 feet on the 14th at Graters Ford. It was the highest free flow stage at that station since it was established in June 1914. There was a stage 0.2 foot higher in February 1925, and one that was 1.8 feet higher in March 1920, but the heights were augmented by backwater from ice gorges. A comparison of discharge revealed that it was the highest flow in the stream, by a considerable margin, since September 1884, when records for that stream were begun.

In July the highest Susquehanna Basin stages were in the West Branch Susquehanna River and its tributaries. The West Branch rose 9.2 feet at Williamsport and the Susquehanna River increased 3.7 feet at Harrisburg.

The following table shows the predicted stages and those which actually occurred:

TABLE NO. XVI.

Predicted and Actual Stages, in feet, reached July 6-7, 1928.

Location	Stream	Predicted Stage	Actual Stage
Bower	West Branch Susquehanna River	9.0	8.7
Clearfield	West Branch Susquehanna River	5.0	a
Renovo	West Branch Susquehanna River	10.0	9.9
Lock Haven	West Branch Susquehanna River	13.0	13.4
Williamsport	West Branch Susquehanna River	15.0	14.5
Sunbury	Susquehanna River	10.0	9.8
Harrisburg	Susquehanna River	11.0	10.3

a Not determined.

During the remainder of the water year, there were no unusual stages in any of the Pennsylvania streams excepting Brandywine Creek, which rose from 1.5 feet on the 16th to 11.0 feet on the 18th of August at Chadds Ford. It was the highest in that stream since March 1920, and had been exceeded only twice since the station was established in August 1911.

PRECIPITATION

Thirty-nine rainfall stations were maintained by the Department of Forests and Waters during the year. The United States Weather Bureau maintains a larger number of stations and publishes its records monthly and annually. As it is more convenient for parties using precipitation records to find them all under one cover, a cooperative arrangement was made with the United States Weather Bureau in 1920 whereby the Department of Forests and Waters furnished its record to the Weather Bureau for publication in its monthly and annual Climatological Data.

Prior to 1920 the Water Supply Commission of Pennsylvania published precipitation records in its annual reports; for subsequent years they have been published by the United States Weather Bureau.

The following table shows the precipitation stations in Pennsylvania, used in preparing the precipitation map shown on page 36. The table comprises the stations of the United States Weather Bureau, the Department of Forests and Waters and those of private interests.

TABLE NO. XVII.

PRECIPITATION STATIONS IN PENNSYLVANIA

ATLANTIC DRAINAGE

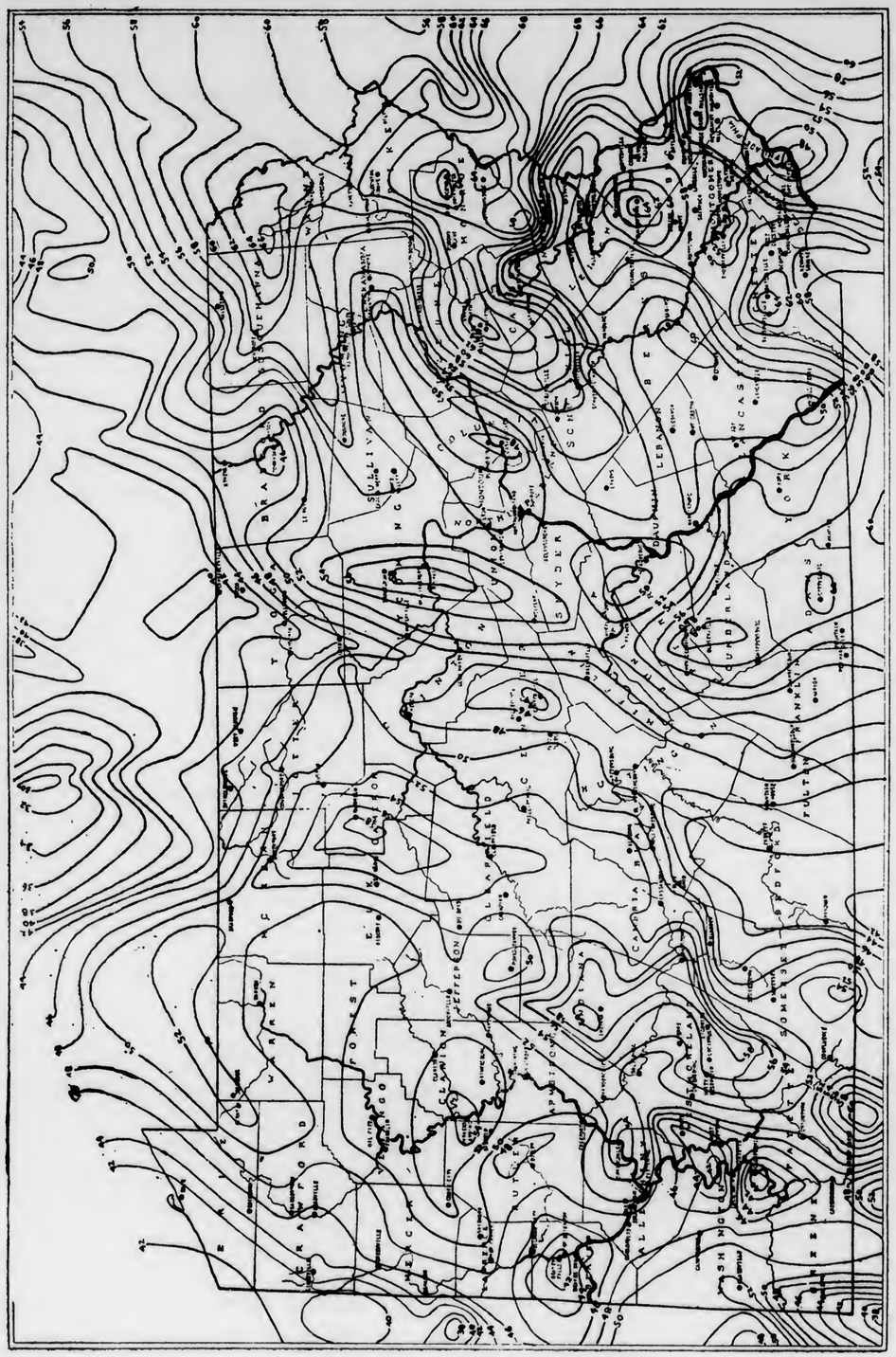
STATION	COUNTY	DRAINAGE BASIN
Allentown	Lehigh	Lehigh
Altoona	Blair	Juniata
Ansonia	Tioga	West Branch Susquehanna
Arendtsville	Adams	Susquehanna
Bakers Summit	Bedford	Juniata
Bellefonte	Centre	West Branch Susquehanna
Bear Gap	Northumberland	Susquehanna
Bethlehem	Northampton	Lehigh
Bloserville	Cumberland	Susquehanna
Bustleton	Philadelphia	Delaware
Campbell's Ledge	Lackawanna	North Branch Susquehanna
Carlisle	Cumberland	Susquehanna
Catawissa	Columbia	North Branch Susquehanna
Cedar Run	Lycoming	West Branch Susquehanna
Centre Hall	Centre	Susquehanna
Chambersburg	Franklin	Potomac
Clearfield	Clearfield	West Branch Susquehanna
Coatesville (a)	Chester	Delaware

STATION	COUNTY	DRAINAGE BASIN
Coatesville (b)	Chester	Delaware
Colebrook	Lebanon	Susquehanna
Conshohocken	Montgomery	Schuylkill
Cresco (Snow Hill)	Monroe	Delaware
Cresson	Cambria	Juniata
Doylestown	Bucks	Delaware
Driftwood	Cameron	West Branch Susquehanna
Dushore	Sullivan	West Branch Susquehanna
Effort	Monroe	Delaware
Emporium	Cameron	West Branch Susquehanna
Ephrata	Lancaster	Susquehanna
Forest City	Susquehanna	North Branch Susquehanna
Freeland	Luzerne	Lehigh
George School	Bucks	Delaware
Gettysburg	Adams	Potomac
Girardville	Schuylkill	Susquehanna
Gordon	Schuylkill	Susquehanna
Gouldsboro	Wayne	Lehigh
Graters Ford	Montgomery	Schuylkill
Hamburg	Berks	Schuylkill
Hanover	York	Susquehanna
Harrisburg	Dauphin	Susquehanna
Harrisburg, East (b)	Dauphin	Susquehanna
Harrisburg, North (b)	Dauphin	Susquehanna
Hawley	Wayne	Delaware
Hollisterville	Wayne	Delaware
Holtwood	Lancaster	Susquehanna
Huntingdon	Huntingdon	Juniata
Huntsville Intake	Luzerne	North Branch Susquehanna
Hyndman	Bedford	Potomac
Lakeville	Wayne	Delaware
Lancaster	Lancaster	Susquehanna
Lansford	Carbon	Lehigh
Lawrenceville	Tioga	North Branch Susquehanna
Lebanon	Lebanon	Susquehanna
Lewisburg	Union	West Branch Susquehanna
Lloyd	Tioga	West Branch Susquehanna
Lock Haven	Clinton	West Branch Susquehanna
Loyalsock	Lycoming	West Branch Susquehanna
Lykens	Dauphin	Susquehanna
Mauch Chunk	Carbon	Lehigh
Mercersburg	Franklin	Potomac
Mifflintown	Juniata	Juniata
Montrose	Susquehanna	North Branch Susquehanna
Morris Run	Tioga	North Branch Susquehanna
Mount Carmel (Res. No. 6)	Northumberland	North Branch Susquehanna
Mount Pocono	Monroe	Delaware
Mount Union	Huntingdon	Juniata
Muncy Valley	Sullivan	West Branch Susquehanna
Narberth	Montgomery	Delaware
Neshaminy Falls	Bucks	Delaware
New Park	York	Susquehanna
Newport	Perry	Juniata
Palmerton	Carbon	Lehigh
Paupack	Pike	Delaware
Philadelphia	Philadelphia	Delaware
Philadelphia, Germantown	Philadelphia	Delaware
Philadelphia, Navy Yard	Philadelphia	Delaware
Philadelphia, Point Breeze	Philadelphia	Delaware
Phoenixville	Chester	Schuylkill
Pike's Creek Intake	Luzerne	North Branch Susquehanna
Pine Grove	Schuylkill	Susquehanna

STATION	COUNTY	DRAINAGE BASIN
Pleasant Mount	Wayne	Delaware
Pottstown	Montgomery	Schuylkill
Pottsville	Schuylkill	Schuylkill
Promised Land	Pike	Delaware
Quakertown	Bucks	Delaware
Reading	Berks	Schuylkill
Renovo	Clinton	West Branch Susquehanna
Scranton	Lackawanna	North Branch Susquehanna
Selinsgrove	Snyder	Susquehanna
Shamokin	Northumberland	Susquehanna
Shawmont	Philadelphia	Schuylkill
South Sterling	Pike	Delaware
Spring Brook Intake	Lackawanna	North Branch Susquehanna
State College	Centre	West Branch Susquehanna
Stroudsburg	Monroe	Delaware
Sunbury	Northumberland	Susquehanna
Tamaqua	Schuylkill	Schuylkill
Towanda	Bradford	North Branch Susquehanna
Weikert	Union	Susquehanna
Wellsboro	Tioga	West Branch Susquehanna
West Chester	Chester	Delaware
West Grove	Chester	Delaware
Wilkes-Barre (a)	Luzerne	North Branch Susquehanna
Wilkes-Barre (c)	Luzerne	North Branch Susquehanna
Williamsport (a)	Lycoming	West Branch Susquehanna
Williamsport, Hagerman Run (b)	Lycoming	West Branch Susquehanna
Williamsport, Mosquito Creek (b)	Lycoming	West Branch Susquehanna
York	York	Susquehanna
York Haven	York	Susquehanna
OHIO DRAINAGE		
Beaver Dam	Beaver	Ohio
Beaver Falls	Beaver	Beaver
Boydstown Reservoir	Butler	Allegheny
Bradford	McKean	Allegheny
Brookville	Jefferson	Allegheny
Butler	Butler	Beaver
Claysville	Washington	Ohio
Cloe	Jefferson	Allegheny
Clymer	Indiana	Kiskiminitas
Confluence	Somerset	Youghiogheny
Coraopolis	Allegheny	Ohio
Corry	Erie	Allegheny
Coudersport	Potter	Allegheny
Creekside	Indiana	Allegheny
Dalton Run	Somerset	Kiskiminitas
Derry	Westmoreland	Kiskiminitas
Donora	Washington	Monongahela
Ebensburg	Cambria	Kiskiminitas
Elk Lick	Somerset	Youghiogheny
Falls Creek	Clearfield	Allegheny
Franklin	Venango	Allegheny
Freeport	Armstrong	Allegheny
Greensboro	Green	Monongahela
Greensburg	Westmoreland	Youghiogheny
Greenville	Mercer	Beaver
Grove City	Mercer	Beaver
Herrs Island Dam	Allegheny	Allegheny
Hinkston Run	Cambria	Kiskiminitas

STATION	COUNTY	DRAINAGE BASIN
Ingram	Allegheny	Ohio
Irwin	Westmoreland	Youghiogheny
Johnstown	Cambria	Kiskiminitas
Ketner	Elk	Allegheny
Kregar	Westmoreland	Youghiogheny
Laurel Run	Cambria	Kiskiminitas
Linesville	Crawford	Beaver
Lock No. 4	Washington	Monongahela
Lycippus	Westmoreland	Kiskiminitas
Meadville	Crawford	Allegheny
Mill Creek	Cambria	Kiskiminitas
Mount Lebanon	Allegheny	Ohio
New Castle	Lawrence	Beaver
Newell	Fayette	Monongahela
North Fork	Somerset	Kiskiminitas
Parkers Landing	Armstrong	Allegheny
Pennline	Crawford	Beaver
Pittsburgh	Allegheny	Ohio
Quemahoning	Somerset	Kiskiminitas
Ridgway (a)	Elk	Allegheny
Ridgway (d)	Elk	Allegheny
Saegertown	Crawford	Allegheny
Saltlick	Cambria	Kiskiminitas
Saltsburg	Indiana	Kiskiminitas
Sharon	Mercer	Beaver
Somerset	Somerset	Youghiogheny
Springdale	Allegheny	Allegheny
Titusville	Crawford	Allegheny
Uniontown	Fayette	Monongahela
Unity Reservoir	Westmoreland	Youghiogheny
Vandergrift	Westmoreland	Kiskiminitas
Warren	Warren	Allegheny
Washington	Washington	Ohio
Westford	Crawford	Beaver
West Newton	Westmoreland	Youghiogheny
Zelienople	Butler	Beaver
LAKE DRAINAGE		
Erie	Erie	Lake Erie

(a) United States Weather Bureau.
(b) Department of Forests and Waters, Water Resources Service.
(c) Spring Brook Water Supply Company.
(d) Associated Gas and Electric Company.



DEPARTMENT OF THE INTERIOR—FORESTS AND WATERS
WATER RESOURCES SERVICE
Map showing Precipitation for the year ending September 30, 1928.

PLATE I

STREAM FLOW RECORDS

DEFINITION OF TERMS

The volume of water flowing in a stream—the "run-off" or discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, and discharge in second-feet per square mile, and (2) those that represent the actual quantity of water, as run-off depth in inches, acre-feet and millions of cubic feet. The principal terms used in this series of reports are second-feet, second-feet per square mile, and run-off in inches. They may be defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section 1 foot wide and 1 foot deep at an average velocity of 1 foot per second. It is generally used as a fundamental unit from which others are computed by the use of factors.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off (depths in inches)" is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

An "acre-foot" is equivalent to 43,560 cubic feet and is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage and irrigation.

The following terms not in common use are here defined:

"Stage-discharge relation," an abbreviation for the term "relation of gage height to discharge."

"Control," a term used to designate the section or sections of the stream below the gage which determine the stage-discharge relation at the gage. It should be noted that the control may not be the same at all stages.

The "point of zero flow" for a gaging station is that point on the gage—the gage height—to which the surface of the river falls when the discharge is reduced to zero.

TABLE NO. XVIII.

CONVERSION TABLES

The following tables afford a ready means of conversion between the terms in common use in hydraulic computations.

Discharge in second-feet per square mile into run-off in depth in inches

Discharge (second-feet per square mile)	Run-off (depth in inches)				
	1 day	28 days	29 days	30 days	31 days
1	0.03719	1.041	1.079	1.116	1.153
2	.07438	2.083	2.157	2.231	2.306
3	.11157	3.124	3.236	3.347	3.459
4	.14876	4.165	4.314	4.463	4.612
5	.18595	5.207	5.393	5.578	5.764
6	.22314	6.248	6.471	6.694	6.917
7	.26033	7.289	7.550	7.810	8.070
8	.29752	8.331	8.628	8.926	9.223
9	.33471	9.372	9.707	10.041	10.376

Note—For part of a month multiply the run-off for 1 day by the number of days.

Discharge in second-feet into run-off in acre-feet

Discharge (second-feet)	Run-off (acre-feet)				
	1 day	28 days	29 days	30 days	31 days
1	1.983	55.54	57.52	59.50	61.49
2	3.967	111.1	115.0	119.0	123.0
3	5.950	166.6	172.6	178.5	184.5
4	7.934	222.1	230.1	238.0	246.0
5	9.917	277.7	287.6	297.5	307.4
6	11.90	333.2	345.1	357.0	368.9
7	13.88	388.8	402.6	416.5	430.4
8	15.87	444.3	460.2	476.0	491.9
9	17.85	499.8	517.7	535.5	553.4

Note—For part of a month multiply the run-off for 1 day by the number of days.

Discharge in second-feet into run-off in millions of cubic feet

Discharge (second-feet)	Run-off (millions of cubic feet)				
	1 day	28 days	29 days	30 days	31 days
1	0.0864	2.419	2.506	2.592	2.678
2	.1728	4.838	5.012	5.184	5.356
3	.2592	7.257	7.518	7.776	8.034
4	.3456	9.676	10.02	10.37	10.71
5	.4320	12.10	12.53	12.96	13.39
6	.5184	14.51	15.04	15.55	16.07
7	.6048	16.93	17.54	18.14	18.75
8	.6912	19.35	20.05	20.74	21.42
9	.7776	21.77	22.55	23.33	24.10

Note—For part of a month multiply the run-off for 1 day by the number of days.

Discharge in second-feet into run-off in millions of gallons

Discharge (second-feet)	Run-off (millions of gallons)				
	1 day	28 days	29 days	30 days	31 days
1	0.6463	18.10	18.74	19.39	20.04
2	1.293	36.20	37.48	38.78	40.08
3	1.939	54.30	56.22	58.17	60.12
4	2.585	72.40	74.96	77.56	80.16
5	3.232	90.50	93.70	96.95	100.2
6	3.878	108.6	112.4	116.3	120.2
7	4.524	126.7	131.2	135.7	140.3
8	5.170	144.8	149.9	155.1	160.3
9	5.817	162.9	168.7	174.5	180.4

Note—For part of a month multiply the run-off for 1 day by the number of days.

Velocity in feet per second into velocity in miles per hour

(1 foot per second=0.681818 mile per hour, or very nearly two-thirds mile per hour; 1 mile per hour=1.46666 feet per second. In computing the table the values 0.68182 and 1.4667 were used).

Feet per second (units)	Miles per hour for tenths of foot per second									
	0	1	2	3	4	5	6	7	8	9
0	0.000	0.068	0.136	0.205	0.273	0.341	0.409	0.477	0.545	0.614
1	.682	.750	.818	.886	.995	1.02	1.09	1.16	1.23	1.30
2	1.36	1.43	1.50	1.57	1.64	1.70	1.77	1.84	1.91	1.98
3	2.05	2.11	2.18	2.25	2.32	2.39	2.45	2.52	2.59	2.66
4	2.73	2.80	2.86	2.93	3.00	3.07	3.14	3.20	3.27	3.24
5	3.41	3.48	3.55	3.61	3.68	3.75	3.82	3.89	3.95	4.02
6	4.09	4.16	4.23	4.30	4.36	4.43	4.50	4.57	4.64	4.70
7	4.77	4.84	4.91	4.98	5.05	5.11	5.18	5.25	5.32	5.39
8	5.45	5.52	5.59	5.66	5.73	5.80	5.86	5.93	6.00	6.07
9	6.14	6.20	6.27	6.34	6.41	6.48	6.55	6.61	6.68	6.75

CONVENIENT EQUIVALENTS

LENGTH

1 inch=1/12 foot=0.027778 yard=0.000015783 mile=2.54 centimeters.
1 foot=12 inches=1/3 yard=0.00018939 mile=0.3048 meter.
1 yard=36 inches=3 feet=0.00056818 mile=0.9144 meter.
1 mile=63,360 inches=5,280 feet=1,760 yards=1.60935 kilometers.
1 meter=100 centimeters=0.001 kilometer=39.37 inches=3.2808 feet=1.0936 yards=0.00062137 mile.

SURFACE

1 square inch=0.006944 square foot=0.0007716 square yard=0.0000001594 acre=0.0000000002491 square mile=6.45163 square centimeters.
1 square foot=144 square inches=1/9 square yard=0.000022957 acre=0.00000003587 square mile=0.092903 square meter.
1 square yard=1,296 square inches=9 square feet=0.0002066 acre=0.0000003228 square mile =0.83613 square meter.
1 acre=6,272,640 square inches=43,560 square feet=4,840 square yards=0.0015625 square mile =208.71 feet square=0.404687 hectare.
1 square mile=4,014,489,600 square inches=27,878,400 square feet=3,097,600 square yards= 640 acres=259 hectares.
1 square meter=10,000 square centimeters=0.0001 hectare=0.000001 square kilometer=1,550 square inches=10.7639 square feet=1.19598 square yards=0.0002471 acre= 0.0000003861 square mile.

VOLUME

1 cubic inch=0.004329 United States gallon=0.0005787 cubic foot=16.3872 cubic centimeters.
1 United States gallon=231 cubic inches=0.13368 cubic foot=0.00000307 acre foot=3.78543 liters.
1 cubic foot=1,728 cubic inches=7.4805 United States gallons=0.037037 cubic yards= 0.00002957 acre-foot=28.317 liters.
1 cubic yard=46,656 cubic inches=27 cubic feet=0.00061983 acre-foot=0.76456 cubic meter.
1 acre-foot=325,851 United States gallons=43,560 cubic feet=1,613 1/3 cubic yards=1,233.49 cubic meters.

1 cubic meter, stere, or kiloliter=1,000,000 cubic centimeters=1,000 liters=61,023.4 cubic inches=264.17 United States gallons=35.3145 cubic feet=1.30794 cubic yards=0.000810708 acre-foot.

HYDRAULICS

1 United States gallon of water weighs 8.34 pounds avoirdupois.
1 cubic foot of water weighs 62.5 pounds avoirdupois.
1 second-foot=7.48 United States gallons per second=448.8 United States gallons per minute=26,929.9 United States gallons per hour=646,317 United States gallons per day.
1 second-foot=60 cubic feet per minute=3,600 cubic feet per hour=86,400 cubic feet per day=31,536,000 cubic feet per year=0.000214 cubic miles per year.
1 second-foot=0.9917 acre-inch per hour=1.983471 acre-feet per day=723.966942 acre-foot per year.
1 second-foot=0.028317 cubic meter per second=1.699 cubic meters per minute=101.941 cubic meters per hour=2,446.58 cubic meters per day.
1 second-foot for 1 year (365 days) will cover 1 square mile 1.1312 feet or 13.5744 inches deep.
1 second-foot falling 10 feet=1.135 horsepower.
100 United States gallons per minute=0.223 second-foot=0.442 acre-foot in one day.
1 million gallons per day=1.55 second-feet=3.07 acre-feet per day=2.629 cubic meters per minute.
1 million gallons per month=0.05525 second-feet for one 28-day month=0.05334 second-foot for one 29-day month=0.05157 second-foot for one 30-day month=0.04990 second-foot for one 31-day month.
1,000,000,000 (1 United States billion) cubic feet=11,570 second feet for one day=413 second-feet for one 28-day month=399 second-feet for one 29-day month=386 second-feet for one 30-day month=373 second-feet for one 31-day month.
1 horsepower=1 second-foot falling 8.8 feet.
1 horsepower=1 second-foot falling 11.0 feet, 80 per cent efficiency.
1 horsepower=5,694,120 foot-gallons per day=550 foot-pounds per second=33,000 foot pounds per minute=1,980,000 foot-pounds per hour=2,545 British thermal units per hour=76 kilogrammeters per second=1.27 kilogrammeters per minute=746 watts.
1.3405 horsepower=1 kilowatt.
1 inch deep on 1 square mile=2,323,200 cubic feet=0.0737 second-foot for 1 year.
1 foot deep (head of 1 foot)=0.434 pound pressure on 1 square inch.
1 cubic meter per minute=0.5886 second-foot=4.403 United States gallons per second=1.1674 acre-feet per day.
1 foot per second=0.68 mile per hour=1.097 kilometers per hour.
Acceleration of gravity, g=32.16 feet per second.

EXPLANATION OF DATA

The data presented in this report covers the period October 1, 1927, to September 30, 1928. At the first of January in most parts of the United States much of the precipitation in the preceding three months is stored as ground water, in the form of snow or ice or in ponds, lakes and swamps, and this stored water passes off in the streams during the spring break-up; at the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for a year beginning October 1 is practically all derived from precipitation within that year.

The base data collected at gaging station consists of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurement in determining the daily flow. The records of stage are obtained from direct readings on a chain or staff gage for stations where automatic water stage recorders have not been installed, while they are computed from the automatic gage graphs for stations that have been equipped with recorders. Measurements of discharge are made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge.

From the discharge measurements rating tables are prepared that give the discharge for any stage. The application of the daily mean

gage heights to these rating tables gives the daily discharge from which the monthly and yearly mean discharge are computed.

The data presented for each gaging station comprises a description of a station, a table giving results of discharge measurements, a table showing daily mean gage height, a table showing the daily discharge, and a table of monthly and yearly discharge and run-off.

Where the base data are insufficient to determine the daily discharge, tables giving daily mean gage heights and results of discharge measurements are published.

The description of the station gives, in addition to statements regarding location and equipment, information in regard to any conditions that may affect the permanence of the stage-discharge relation, covering such subjects as the occurrence of ice, shifting of control, and the cause and effect of backwater. It gives also information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded stages, and the accuracy of the records.

The table of daily discharge gives the discharge in second-feet corresponding to the mean of the gage heights read each day. At stations on streams subject to sudden or rapid diurnal fluctuation the discharge obtained from the rating table and the daily mean gage heights may not be the true mean discharge for the day.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height, and the corresponding discharge was consequently larger than that given in the maximum column. Likewise, in the column headed "Minimum," the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow computations recorded in the remaining columns are based.

ACCURACY OF FIELD DATA AND COMPUTED RECORDS

The accuracy of stream-flow data depends primarily (1) on the permanence of the stage-discharge relation and (2) on the accuracy of observation of stage, measurement of flow, and interpretation of records.

A paragraph in the description of the station gives information regarding (1) permanence of the stage-discharge relation, (2) precision with which the discharge rating curve is defined, (3) refinement of gage readings, (4) frequency of gage readings, and (5)

methods of applying daily mean gage height to the rating table to obtain the daily discharge.

For the rating tables "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined," within 10 per cent; "poorly defined," within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The monthly means for any station may represent with high accuracy the quantity of water flowing past the gage, but the figures showing discharge per square mile and depth of run-off in inches may be subject to some error caused by the inclusion of non-contributing districts in the measured drainage area, or by inability to interpret the effect of artificial regulation of the flow of the river above the station.

The table of monthly discharge gives only a general idea of the flow at the station and should not be used for other than preliminary estimates; the tables of daily discharge allow more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

The Commonwealth of Pennsylvania is divided into three main drainage basins; the Delaware, Susquehanna and Ohio. The hydrographic data in the following pages are divided into three groups, corresponding to these three basins. The stations in each basin are shown in the following tables and their location is indicated on the map (Plate II) with reference number corresponding to those given in the tables.

TABLE NO. XIX

Gaging Stations in Delaware Basin*

Station No.	Stream	Location
1	Lackawaxen River	West Hawley
2	Wallenpaupack Creek	Wilsonville
3	Shohola Creek	Shohola
4	Delaware River	Port Jervis, N. Y.
5	Bushkill Creek	Shoemakers
6	McMichaels Creek	Stroudsburg
7	Delaware River	Belvidere, N. J.
8	Lehigh River	Tannery
9	Little Lehigh Creek	Allentown
10	Lehigh River	Bethlehem
11	Delaware River	Riegelsville
12	Delaware River	Trenton, N. J.
13	Little Schuylkill River	Tamaqua
14	Schuylkill River	Reading
15	Schuylkill River	Pottstown
16	Perkiomen Creek	Graters Ford
17	Schuylkill River	Norristown
18	Brandywine Creek	Chadds Ford

*For information available on each station, see description of station.

TABLE NO. XX

Gaging Stations in Susquehanna Basin*

Station No.	Stream	Location
1	North Branch Susquehanna River	Binghamton, N. Y.
2	Chemung River	Corning, N. Y.
3	North Branch Susquehanna River	Towanda
4	Towanda Creek	Monroeton
5	Tunkhannock Creek	Dixon
6	Lackawanna River	Moosic
7	North Branch Susquehanna River	Wilkes-Barre
8	Wapwallopen Creek	Wapwallopen
9	Fishing Creek	Bloomsburg
10	North Branch Susquehanna River	Danville
11	West Branch Susquehanna River	Bower
12	Clearfield Creek	Dimeling
13	Driftwood Branch Sinnemahoning Creek	Sterling Run
14	West Branch Susquehanna River	Renovo
15	West Branch Susquehanna River	Lock Haven
16	Bald Eagle Creek	Milesburg
17	Bald Eagle Creek	Beech Creek Station
18	Pine Creek	Cedar Run
19	Lycoming Creek	Trout Run
20	West Branch Susquehanna River	Williamsport
21	Loyalsock Creek	Loyalsock
22	Susquehanna River	Sunbury
23	Frankstown Branch Juniata River	Williamsburg
24	Little Juniata River	Tyrone
25	Raystown Branch Juniata River	Saxton
26	Tuscarora Creek	Port Royal
27	Juniata River	Newport
28	Susquehanna River	Harrisburg
29	Little Swatara Creek	Pine Grove
30	Swatara Creek	Harpers
31	South Branch Codorus Creek	York
32	Codorus Creek	York

*For information available on each station, see description of station.

TABLE NO. XXI

Gaging Stations in Ohio Basin*

Station No.	Stream	Location
1	Allegheny River	Larabee
2	Brokenstraw Creek	Youngsville
3	Tionesta Creek	Nebraska
4	Oil Creek	Rouseville
5	French Creek	Kimmeytown
6	French Creek	Saegertown
7	Cussewago Creek	Meadville
8	Allegheny River	Franklin
9	Clarion River	Piney
10	Red Bank Creek	Saint Charles
11	Mahoning Creek	Dayton
12	Allegheny River	Kittanning
13	Crooked Creek	Hileman's Farm
14	Stony Creek	Johnstown
15	Blacklick Creek	Blacklick
16	Loyalhanna Creek	New Alexandria
17	Kiskiminitas River	Avonmore
18	Kiskiminitas River	Vandergrift
19	South Fork Ten Mile Creek	Pollock's Mill
20	Monongahela River	South Brownsville
21	Youghiogheny River	Friendsville, Md.
22	Casselman River	Markleton
23	Laurel Hill Creek	Ursina
24	Youghiogheny River	Connellsville
25	Youghiogheny River	Sutersville
26	Turtle Creek	Trafford
27	Chartiers Creek	Carnegie
28	Shenango River	Jamestown
29	Little Shenango River	Greenville
30	Pymatuning Creek	Orangeville
31	Shenango River	Sharon
32	Shenango River	New Castle
33	Connoquenessing Creek	Hazen
34	Slippery Rock Creek	Wurtemburg
35	Raccoon Creek	Moffatt's Mill

*For information available on each station, see description of station.

DEPARTMENT OF FORESTS AND WATERS
WATER RESOURCES SERVICE

Map showing location of Gaging Stations for the year ending September 30, 1928.

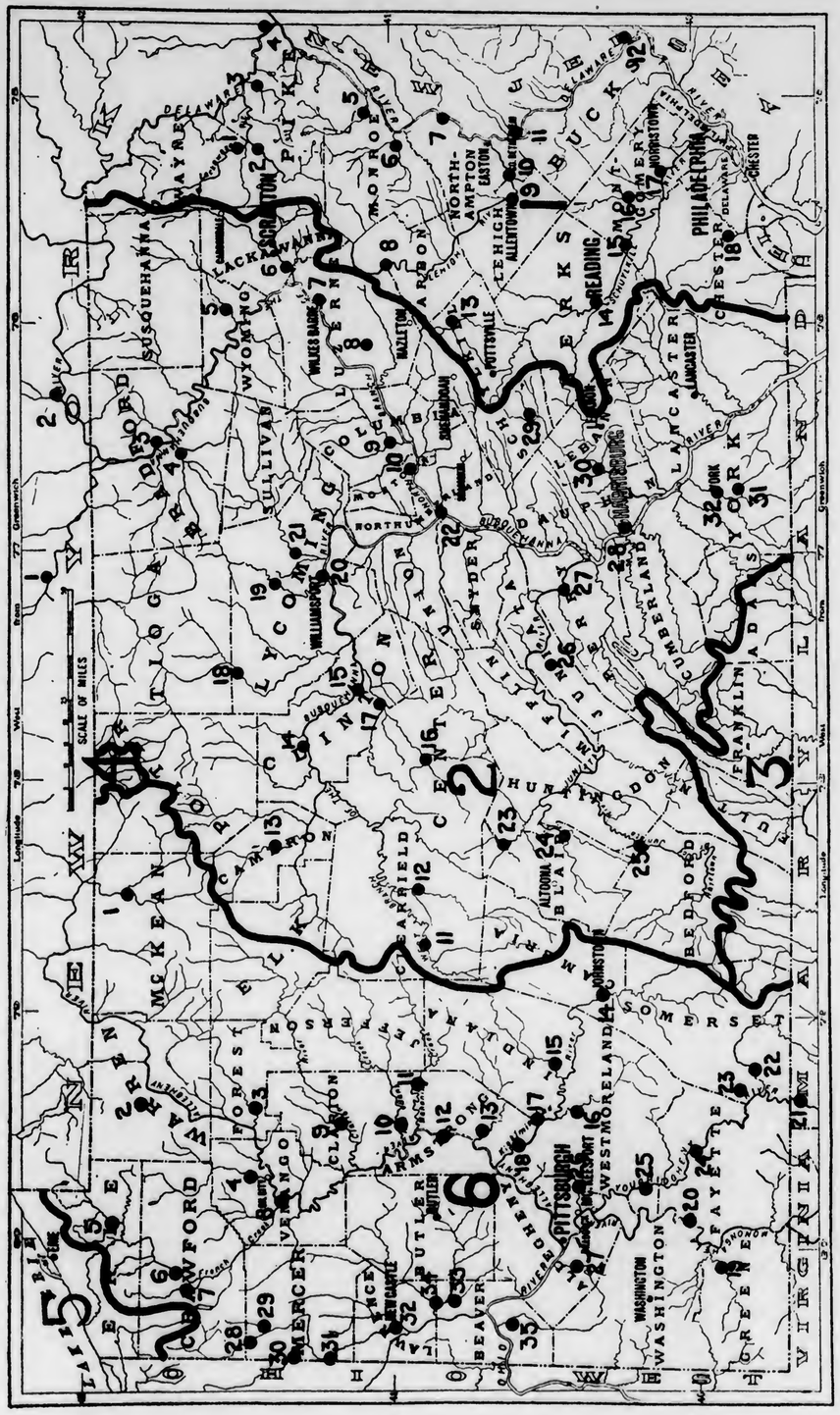


PLATE II

Legend.—Drainage Basins—(1) Delaware, (2) Susquehanna, (3) Potomac, (4) Genesee, (5) Erie, (6) Ohio.

GAGING STATION RECORDS

DELAWARE BASIN

DELAWARE BASIN—STATION NO. 1

LACKAWAXEN RIVER NEAR WEST HAWLEY

Location.—At single-span steel highway bridge, known as Riverside Bridge, West Hawley, Wayne County, about one-half mile upstream from the mouth of Middle Creek.

Drainage Area.—212 square miles.

Records Available.—May 19, 1921, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by F. C. Tyce.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both sides of the channel are outlined by retaining walls downstream from the bridge. Banks are of medium height and subject to overflow at extremely high stages. Bed is composed of gravel. Control is at a riffle about 50 feet downstream from the gage, where the bed is composed of coarse gravel.

Extremes of Discharge.—Maximum stage during the year, 10.32 feet observed at 5.15 a. m. June 30 (discharge, about 8,700 second-feet); minimum, 1.22 feet at 8.10 a. m. October 2 (discharge, 63 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined from 50 to 500 second-feet and fairly well defined between 500 and 3,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for discharge above 500 second-feet, when they may be only fair.

Discharge measurements of Lackawaxen River near West Hawley during the year ending Sept. 30, 1928.

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
16	July 18	R. E. Marsh	2.43	441
17	Aug. 7	J. M. Snavely	2.68	506

Daily Mean Gage Height, in feet, of Lackawaxen River near West Hawley, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.29	1.86	3.30	3.50	1.90	1.99	2.64	5.85	1.96	4.85	2.02	2.07
2	1.24	1.84	3.08	2.38	1.87	1.88	2.56	4.20	1.97	3.70	1.98	1.93
3	1.60	3.17	4.10	2.13	1.87	1.87	2.46	3.48	1.88	3.07	1.90	3.00
4	3.91	4.90	3.16	2.04	1.88	1.80	2.47	3.06	1.90	2.68	1.84	2.92
5	2.51	3.82	2.97	2.13	2.47	1.71	2.63	3.00	3.70	2.90	1.78	2.38
6	2.04	3.26	2.79	2.09	2.28	1.54	2.72	3.70	4.98	4.15	2.36	2.18
7	1.84	2.91	2.74	2.04	2.07	1.75	2.70	2.99	4.00	2.90	2.54	2.11
8	1.82	2.60	6.02	2.10	2.76	1.73	3.38	2.64	3.10	2.53	2.35	2.06
9	1.78	2.53	4.06	2.17	3.30	1.76	2.90	2.51	2.84	2.33	2.51	1.98
10	1.69	2.45	3.25	2.12	2.76	1.77	2.54	2.39	3.30	2.24	2.40	1.90
11	1.64	2.56	3.01	2.02	2.36	1.78	2.39	2.25	2.71	2.21	4.17	1.84
12	1.84	2.56	3.40	1.97	2.19	1.69	3.15	2.17	2.43	2.08	2.74	1.75
13	4.39	2.34	4.05	1.95	2.21	2.18	3.12	2.06	2.28	2.20	2.36	1.69
14	3.15	2.22	5.35	2.14	2.29	3.55	3.10	1.95	2.20	6.78	2.13	1.65
15	2.49	2.16	4.12	2.09	4.64	2.79	4.20	1.90	2.15	4.55	2.02	1.62
16	2.21	2.14	3.50	1.92	3.04	2.30	3.18	1.85	1.96	3.14	1.93	1.59
17	2.60	2.55	3.29	1.91	2.48	2.08	2.80	1.81	1.87	2.67	2.04	1.62
18	5.45	6.38	2.89	1.86	2.44	2.08	2.59	2.25	1.84	2.42	2.24	1.64
19	9.25	3.99	2.53	1.85	2.04	2.06	2.49	2.90	3.20	2.27	2.06	1.65
20	6.79	3.24	2.54	1.83	2.06	1.97	2.32	3.78	3.58	2.33	1.89	1.72
21	5.00	2.94	2.46	1.70	1.96	1.94	2.24	3.30	2.75	2.14	1.78	1.70
22	3.74	2.74	2.36	1.88	1.84	1.93	3.10	2.80	3.64	2.11	2.09	1.64
23	3.23	2.59	2.26	1.81	2.23	1.99	5.18	3.54	3.45	2.12	2.07	1.52
24	2.92	2.95	2.15	2.55	3.54	3.00	5.70	2.84	3.30	2.03	1.85	1.49
25	2.65	3.03	2.07	3.48	2.87	3.58	4.20	2.59	3.70	1.92	1.83	1.50
26	2.49	2.60	2.01	2.96	2.22	3.62	3.44	2.40	4.60	1.80	2.07	1.50
27	2.33	3.35	2.03	2.12	2.08	3.82	3.08	2.32	4.60	2.40	2.63	1.49
28	2.21	3.60	1.93	2.06	2.02	3.01	3.78	2.25	3.39	4.14	2.35	1.47
29	2.16	4.40	2.05	1.99	1.95	2.69	4.86	2.19	4.55	2.68	2.20	1.45
30	2.04	3.68	2.54	1.93	-------	3.30	5.69	2.10	8.44	2.22	2.05	1.42
31	1.94	-------	3.10	1.99	-------	2.95	-------	2.05	-------	2.07	2.27	-------

NOTE—Stage-discharge relation Jan. 5, 6, 19, 20, 22 and Jan. 30 to Feb. 3 affected by ice.

Daily discharge, in second-feet, of Lackawaxen River near West Hawley, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	236	850	970	200	281	515	2,750	270	1,920	284	302
2	66	230	732	424	190	243	476	1,450	274	1,090	277	260
3	148	790	1,380	336	200	240	442	970	243	732	250	675
4	1,230	2,010	790	302	243	216	442	732	250	536	230	625
5	459	1,160	650	280	442	185	515	675	1,090	625	209	424
6	302	850	580	280	389	129	558	1,090	2,090	1,450	406	354
7	230	625	558	302	302	199	536	675	1,300	625	476	319
8	223	494	2,920	319	558	192	910	515	732	476	406	302
9	209	476	1,380	336	850	202	625	459	602	406	459	277
10	179	442	790	319	558	206	476	424	850	372	424	250
11	162	476	675	284	406	209	424	372	536	354	1,450	230
12	230	476	910	274	354	179	790	336	442	319	558	199
13	1,610	406	1,300	267	354	354	732	302	389	354	406	179
14	790	354	2,420	336	389	1,030	732	267	354	3,580	336	165
15	459	336	1,380	319	1,770	580	1,450	250	336	1,770	284	155
16	354	336	970	257	675	389	790	233	270	732	260	145
17	494	476	850	253	459	319	580	219	240	515	302	155
18	2,420	3,260	625	236	442	319	494	372	230	424	372	162
19	6,850	1,300	476	200	302	302	459	625	790	372	302	165
20	3,580	790	476	180	302	274	389	1,160	1,030	406	247	189
21	2,090	650	442	182	270	264	372	850	558	336	209	182
22	1,090	558	406	200	230	260	732	580	1,030	319	319	162
23	790	494	372	219	372	281	2,250	970	910	319	302	123
24	625	650	336	476	970	675	2,680	602	850	302	233	115
25	515	675	302	970	602	1,030	1,450	494	1,090	257	226	117
26	459	494	284	650	354	1,030	910	424	1,770	216	302	117
27	406	910	302	319	319	1,160	732	389	1,770	424	515	115
28	354	1,030	260	302	284	675	1,160	372	910	1,380	406	110
29	336	1,610	302	281	267	536	2,010	354	1,770	536	354	105
30	302	1,090	476	240	-------	850	2,680	319	5,780	354	302	98
31	264	-------	732	200	-------	650	-------	302	-------	302	372	-------

NOTE—Discharge Jan. 5, 6, 19, 20, 22 and Jan. 30 to Feb. 3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shohola Creek near Shohola, Tunkhannock Creek near Dixon and Lackawanna River at Moosic.

Monthly discharge of Lackawaxen River near West Hawley, for the year ending Sept. 30, 1928

Drainage area 212 square miles

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	6,850	66	881	4.16	4.80
November	3,260	230	789	3.72	4.15
December	2,920	260	804	3.79	4.37
January	970	180	339	1.60	1.84
February	1,770	190	450	2.12	2.29
March	1,160	129	434	2.05	2.36
April	2,680	372	910	4.29	4.79
May	2,750	219	630	2.97	3.42
June	5,780	230	959	4.52	5.04
July	3,580	216	703	3.32	3.83
August	1,610	209	370	1.75	2.02
September	675	98	226	1.07	1.19
The Year	6,850	66	625	2.95	40.10

DELAWARE BASIN—STATION NO. 2

WALLENPAUPACK CREEK AT WILSONVILLE

Location.—At two-span steel highway bridge, about one and a half miles south of Hawley, at Wilsonville, Wayne County, previous to the construction of the Pennsylvania Power and Light Company Dam, a short distance downstream from the gaging station.

The dam was closed on November 3, 1925, and since the Power and Light Company began operating their plant, located on the southerly side of the Lackawaxen River about two and a half miles downstream from Hawley, the flow of Wallenpaupack Creek has been diverted from the storage created by the Wilsonville Dam through about three miles of pipe line to their plant.

Drainage Area.—227 square miles.

Records Available.—July 3, 1908, to September 30, 1928, excepting August 1 to September 14, 1923, and September 1 to November 11, 1924.

Measurements.—Monthly flow of stream computed from power house data, including adjustment for reservoir fluctuations and estimated quantity of evaporation.

Cooperation.—Record furnished by Pennsylvania Power and Light Company, Allentown, Pennsylvania.

Monthly discharge of Wallenpaupack Creek at Wilsonville, for the year ending Sept. 30, 1928

Drainage Area 227 square miles

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October			806	3.55	4.09
November			988	4.35	4.85
December			712	3.14	3.62
January			481	2.12	2.44
February			510	2.25	2.43
March			636	2.80	3.23
April			718	3.16	3.53
May			827	3.64	4.20
June			631	2.78	3.10
July			851	3.75	4.32
August			295	1.30	1.50
September			323	1.42	1.58
The Year			649	2.86 mile	38.89 inches

DELAWARE BASIN—STATION NO. 3

SHOHOLA CREEK NEAR SHOHOLA

Location.—At single-span steel highway bridge about one and three-quarter miles south of Shohola, Pike County.

Drainage Area.—82 square miles.

Records Available.—February 19, 1919, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Walter P. Hess.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left is of medium height and overflows during extremely high stages. Bed is composed of coarse gravel and large stones. Control is at the first of a series of riffles about 150 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 4.8 feet at 10 p. m. December 8 (discharge, 1,810 second-feet); minimum, 1.5 feet at 6.30 a. m. on October 1, 2 and 3 (discharge, 37 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 8 and 250 second-feet and fairly well defined from 250 to 1,000 second feet. Gage read to tenths once daily; during high stages more frequently. Daily discharge ascertained by applying to rating table daily mean gage height, computed from a continuous daily hydrograph, obtained by plotting gage readings. Results good except for discharge above 250 second-feet, when they may be only fair.

Cooperation.—Station was maintained in cooperation with Gannett, Seelye & Fleming, Inc., Engineers, Harrisburg, Pennsylvania, previous to February 1, 1928.

Discharge measurements of Shohola Creek near Shohola during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
18	Aug. 7	J. M. Snavely	2.04	125

Daily Mean Gage Height, in feet, of Shohola Creek near Shohola, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.5	2.3	2.6	2.4	2.3	2.4	2.9	3.4	2.1	4.0	2.0	2.5
2	1.5	2.3	2.6	2.4	2.2	2.4	2.9	3.4	2.1	-------	2.0	2.85
3	1.5	2.75	2.6	2.2	2.0	2.3	2.9	3.4	1.8	3.55	2.0	3.0
4	2.4	3.8	2.7	2.2	2.0	2.2	2.6	3.4	2.0	3.4	1.8	2.9
5	2.4	3.75	2.7	2.2	2.0	2.2	2.6	3.4	2.5	3.45	1.8	2.7
6	2.4	3.6	2.7	2.3	1.9	2.2	2.5	2.8	2.8	3.6	1.9	-------
7	2.3	3.55	2.8	2.3	2.3	2.1	2.5	2.8	2.8	3.5	2.1	2.5
8	2.0	3.5	4.35	2.1	2.4	2.1	2.7	2.9	2.8	3.25	2.1	-------
9	2.0	3.2	4.5	2.2	2.4	2.1	2.7	2.5	2.8	3.1	2.1	2.35
10	1.9	2.6	3.8	2.2	2.3	2.2	2.7	2.5	2.8	2.85	2.5	2.3
11	1.9	2.6	3.4	2.1	2.4	2.2	2.6	2.4	2.7	2.5	3.5	2.25
12	1.8	2.6	3.4	2.1	2.3	2.2	2.7	2.3	2.6	2.5	-------	2.25
13	1.9	2.6	3.2	2.1	2.3	2.1	2.7	2.3	2.6	2.7	2.9	2.3
14	1.9	2.6	3.1	2.1	2.2	2.2	2.8	2.3	2.6	3.2	-------	2.2
15	1.9	2.4	3.0	2.1	2.4	2.3	2.8	2.3	2.3	-------	2.3	2.0
16	1.9	2.4	3.0	2.1	2.4	2.3	2.8	2.3	2.3	3.0	2.1	2.0
17	2.0	2.75	2.9	2.1	2.4	2.3	2.7	2.2	2.3	2.8	-------	1.9
18	2.6	3.85	2.7	2.0	2.6	2.3	2.6	2.2	2.3	2.6	-------	2.0
19	4.25	3.75	2.7	2.0	2.5	2.3	2.6	2.3	2.3	2.5	-------	1.95
20	4.5	3.6	2.5	2.0	2.5	2.3	2.6	2.3	2.3	2.5	-------	2.0
21	4.3	3.5	2.4	2.0	2.5	2.0	2.6	2.3	2.5	2.3	-------	1.95
22	3.55	3.5	2.4	2.1	2.4	2.0	2.7	2.3	2.5	2.4	2.05	1.95
23	3.3	3.5	2.4	2.1	2.4	2.0	2.8	2.3	2.5	2.4	2.1	1.9
24	3.3	3.6	2.4	2.1	2.8	2.0	2.9	2.3	2.5	2.3	2.1	1.85
25	3.3	3.6	2.3	2.5	2.7	2.5	2.9	2.3	2.5	2.3	2.25	1.8
26	2.8	3.0	2.2	2.4	2.6	2.6	2.9	2.3	2.6	2.15	2.5	1.8
27	2.8	2.7	2.3	2.4	2.5	2.6	2.6	2.2	2.6	2.05	2.95	1.8
28	2.8	2.7	2.3	2.4	2.4	2.6	2.8	2.2	2.5	2.1	3.1	1.7
29	2.5	2.8	2.2	2.3	2.4	2.6	3.3	2.2	2.9	2.1	2.9	1.65
30	2.5	2.8	2.2	2.2	-------	2.7	3.3	2.1	3.75	2.1	2.65	1.65
31	2.4	-------	2.3	2.2	-------	2.8	-------	2.1	-------	2.0	2.55	-------

NOTE—Stage-discharge relation Dec. 19-25, Jan. 1-7, 22, 23, Jan. 31 to Feb. 5 and Feb. 15 and 16 affected by ice. Gage height July 2, 15, Aug. 12, 14, 17-21, Sept. 6 and 8 unsatisfactory.

Daily discharge, in second-feet, of Shohola Creek near Shohola, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	37	189	285	160	120	218	408	673	139	1090	117	250
2	37	189	285	140	95	218	408	673	139	900	117	386
3	37	344	285	130	90	189	408	673	79	768	117	455
4	218	939	323	130	80	163	285	673	117	673	79	403
5	218	894	323	120	90	163	285	673	250	704	79	323
6	218	800	323	120	97	163	250	364	364	800	97	260
7	189	768	364	120	189	139	250	364	364	735	139	250
8	117	735	1430	139	218	139	323	408	364	586	139	220
9	117	558	1520	163	218	139	323	250	364	505	139	204
10	97	285	939	163	189	163	323	250	364	386	250	189
11	97	285	673	139	218	163	285	218	323	250	735	176
12	79	285	673	139	189	163	323	189	285	250	600	176
13	97	285	558	139	189	139	323	189	285	323	408	189
14	97	285	505	139	163	163	364	189	285	558	260	163
15	97	218	455	139	160	189	364	189	189	550	189	117
16	97	218	455	139	190	189	364	189	189	455	139	117
17	117	344	408	139	218	189	323	163	189	364	90	97
18	285	971	323	117	285	189	285	163	189	285	65	117
19	1250	894	240	117	250	189	285	189	189	250	65	107
20	1520	800	200	117	250	189	285	189	189	250	80	117
21	1340	735	190	117	250	117	285	189	250	189	100	107
22	768	735	160	120	218	117	323	189	250	218	128	107
23	614	735	150	120	218	117	364	189	250	218	139	97
24	614	800	140	139	364	117	408	189	250	189	139	88
25	614	800	140	250	323	250	408	189	250	189	176	79
26	364	455	163	218	285	285	408	189	285	151	250	79
27	364	323	189	218	250	285	285	163	285	128	432	79
28	364	323	189	218	218	285	364	163	250	139	505	63
29	250	364	163	189	218	285	614	163	408	139	408	56
30	250	364	163	163	-------	323	614	139	894	139	304	56
31	218	-------	189	140	-------	364	-------	139	-------	117	268	-------

NOTE—Discharge estimated Dec. 19-25, Jan. 1-7, 22, 23, Jan. 31 to Feb. 5, Feb. 15 and 16, because of ice, from weather records, study of gage height graph and comparison with similar studies for Lackawaxen River near West Hawley and Bushkill Creek near Shoemakers, and July 2, 15, Aug. 12, 14, 17-21, Sept. 6 and 8, because of unsatisfactory gage height record, from weather records, study of gage height graph and comparison with discharge of Bushkill Creek near Shoemakers.

Monthly discharge of Shohola Creek near Shohola, for the year ending Sept. 30, 1928

(Drainage area 82 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,520	37	348	4.24	4.80
November	971	189	531	6.48	7.23
December	1,520	140	400	4.88	5.63
January	250	117	148	1.80	2.08
February	364	80	201	2.45	2.64
March	364	117	194	2.37	2.73
April	614	250	351	4.28	4.78
May	673	139	283	3.45	3.98
June	894	79	274	3.34	3.73
July	1,090	117	403	4.91	5.66
August	600	65	218	2.66	3.07
September	455	56	171	2.09	2.33
The Year	1,520	37	294	3.59	48.75

DELAWARE RIVER AT PORT JERVIS, N. Y.

Location.—At steel highway bridge, Port Jervis, Orange County, 1½ miles upstream from mouth of Neversink River, and 6 miles downstream from mouth of Mongaup River.

Drainage Area.—3,070 square miles (measured on topographic maps).

Records Available.—October 12, 1904, to September 30, 1928.

Equipment.—Au 7-day water-stage recorder on right bank 350 feet downstream from highway bridge; installed August 14, 1928. Chain gage on downstream side of left span of bridge and staff gage on left bank previously used. All gages set to same datum but owing to difference in location with respect to the control the recorder does not agree with the chain and staff gages.

Discharge measurements made from downstream side of highway bridge or by wading.

Channel and Control.—Bed of stream composed of gravel. Banks high and not subject to overflow. Control composed of boulders and gravel; shifts occasionally.

Extremes of Discharge.—Maximum stage recorded during year, 12.4 feet at 5 p. m. October 19 (discharge, 62,700 second-feet); minimum stage recorded, 1.8 feet at 8 a. m. and 5 p. m. October 3 (discharge 1,060 second-feet).

1904-1928: Maximum discharge recorded, 92,700 second-feet at 8 a. m. March 28, 1914 (gage height, 16.0 feet); minimum stage recorded, 0.60 foot at 8 a. m. September 22 and 23, 1908 (discharge, 175 second-feet).

During the flood of October 10-11, 1903, a crest stage of 23.3 feet gage height was observed by Mr. Righter, city engineer of Port Jervis. This gage height corresponds to a discharge of about 155,000 second-feet.

Diversions and Regulation.—Operation of power plants and storage reservoirs on tributary streams, particularly on the Lackawaxen and Mongaup rivers, causes some diurnal fluctuation during low stages.

Accuracy.—Stage-discharge relation permanent during year except as affected by change in location of gages; not affected by ice. Rating curve well defined by 25 discharge measurements between 600 and 25,000 second-feet; extended logarithmically beyond these limits. Four of the measurements, covering a range from 4,600 to 13,300 second-feet, were made during the current year and check the curve closely. Gage read to quarter-tenths twice daily October 1 to August 13; operation of water-stage recorder satisfactory August 14 to September 30. Daily discharge prior to August 14 ascertained by applying mean daily gage height to rating table or, for days of considerable fluctuation in stage, by constructing a gage height graph on basis of the daily gage readings and averaging discharge for intervals of the day, except as indicated in footnote to daily discharge table. Daily discharge, August 14 to September 30, ascertained by applying to rating table mean daily gage height obtained by inspection from recorder graph after adjustment to apply to chain gage rating or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day. Records good except those estimated, which are fair.

Cooperation.—Record furnished by United States Geological Survey Office, Albany, New York.

Discharge measurements of Delaware River at Port Jervis, N. Y., during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
109	Oct. 5	Harrington & Sutton	5.65	13,300
110	Apr. 6	Johnson & F. H. Harrington	4.80	8,870
111	Aug. 14	Johnson & Graves	3.71	4,990
112	Sept. 7	Harrington & Hill	3.52	4,590

Daily discharge, in second-feet, of Delaware River at Port Jervis, N. Y., for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,250	4,500	15,500	13,500	2,970	4,800	9,220	27,60	5,42	35,50	4,500	6,280
2	1,180	4,500	13,500	12,500	3,200	4,500	7,980	24,10	5,10	26,90	4,800	4,500
3	1,060	9,020	15,500	8,800	3,200	3,690	7,200	18,80	4,80	17,60	5,420	6,240
4	2,750	25,200	17,000	7,200	3,080	2,970	7,200	16,40	4,22	13,50	4,220	10,100
5	13,200	36,800	14,000	6,460	2,970	2,970	6,820	16,40	8,10	11,50	3,690	7,580
6	7,500	24,100	12,000	6,460	2,540	2,750	7,980	17,60	18,50	21,30	4,500	5,760
7	4,800	20,600	10,500	6,460	2,440	2,540	10,100	16,40	32,90	17,60	6,820	4,950
8	3,950	15,200	24,000	6,820	3,200	2,340	12,000	12,00	22,00	11,50	7,200	4,500
9	3,690	10,600	44,500	7,200	9,220	2,240	10,600	9,660	15,20	7,980	5,760	3,950
10	3,690	10,100	30,000	5,760	7,580	2,750	9,660	8,38	15,20	7,58	6,100	3,950
11	3,200	9,220	22,700	5,100	6,460	2,750	8,800	7,200	15,800	7,200	6,100	3,690
12	2,860	8,380	16,000	4,500	5,760	2,970	12,000	6,460	11,500	6,100	7,200	3,110
13	6,670	7,980	17,000	4,500	4,800	5,100	12,500	5,420	9,220	5,760	6,820	2,840
14	20,100	7,580	30,400	4,220	4,220	9,220	12,000	5,420	7,980	9,220	5,420	3,060
15	11,500	6,460	28,300	4,220	15,200	8,800	11,500	4,800	7,200	16,500	4,360	3,130
16	10,600	5,760	23,000	4,220	21,300	7,580	11,500	4,220	6,460	10,100	3,950	2,670
17	10,100	7,120	19,000	3,950	17,000	5,420	10,600	3,950	5,100	7,580	3,950	2,580
18	14,900	43,800	16,000	3,690	7,980	5,420	9,220	3,690	4,220	5,760	5,100	2,770
19	54,600	41,300	14,000	3,440	7,580	5,100	8,380	4,800	5,100	5,100	4,800	2,790
20	56,900	25,800	13,000	3,200	6,820	4,220	7,580	10,600	10,100	4,500	4,500	2,900
21	41,900	20,000	11,500	2,970	5,100	3,690	6,820	15,200	8,380	4,220	3,690	2,950
22	26,900	15,800	10,100	2,540	3,690	3,690	7,580	11,500	9,660	3,690	3,560	2,950
23	18,800	12,000	9,220	2,540	7,000	3,950	20,000	13,500	10,600	3,690	3,950	2,360
24	15,800	12,000	7,580	2,340	12,000	4,500	33,200	20,000	8,380	6,100	3,820	2,230
25	11,500	11,500	5,760	3,200	15,000	13,500	29,000	13,000	8,800	5,420	3,560	2,460
26	9,660	11,000	4,800	7,980	9,000	17,600	20,000	10,100	13,000	4,220	4,250	2,500
27	7,980	12,000	3,950	5,420	6,100	18,800	15,200	8,800	14,600	3,950	16,600	2,460
28	6,820	20,200	3,440	3,950	5,420	17,600	17,000	7,980	14,000	10,100	12,000	2,460
29	5,760	20,600	3,950	3,690	4,800	15,800	23,40	7,580	11,000	11,000	8,590	2,460
30	5,100	19,400	6,100	3,440	-------	14,00	30,40	6,460	43,800	6,820	6,280	2,010
31	4,500	-------	10,100	3,200	-------	12,500	-------	6,100	-------	5,420	6,280	-------

NOTE—Discharge Oct. 1 to Aug. 13 determined from chain gage readings and Aug. 14 to Sept. 30 from recording gage record, adjusted to rating for chain gage. Discharge Oct. 5, 6, 13, 14, 18-20, Nov. 3-6, 17-20, 28, June 5-7, 30, July 14, 15, Aug. 26, 27 and Sept. 3, determined by averaging discharge for intervals of the day. Discharge Dec. 1-4, 7-10, 12, 13, 16-18 Jan. 1, 2 and Feb. 23-26 estimated, because of unreliable gage heights, from comparative studies.

Monthly discharge of Delaware River at Port Jervis, N. Y., for the year ending Sept. 30, 1928

(Drainage area 3,070 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	56,900	1,060	12,600	4.10	4.73
November	43,800	4,500	16,000	5.21	5.81
December	44,500	3,440	15,200	4.95	5.71
January	13,500	2,340	5,270	1.72	1.98
February	21,300	2,440	7,090	2.31	2.49
March	18,800	2,240	6,900	2.25	2.59
April	33,200	6,820	13,200	4.30	4.80
May	27,600	3,690	11,100	3.62	4.17
June	43,800	4,220	11,900	3.88	4.33
July	35,500	3,690	10,100	3.29	3.79
August	16,600	3,560	5,740	1.87	2.16
September	10,100	2,010	3,740	1.22	1.36
The Year	56,900	1,060	9,900	3.22	43.92

DELAWARE BASIN—STATION NO. 5

BUSHKILL CREEK NEAR SHOEMAKERS

Location.—At single-span steel highway bridge, about three-quarters of a mile northwest of Shoemakers, Monroe County.

Drainage Area.—115 square miles.

Records Available.—September 19, 1908, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by Mary F. Reidmiller.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control is at the first of a series of riffles, a short distance downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 4.72 feet observed at 4 p. m., December 8 (discharge, 1,400 second-feet); minimum, 1.48 feet on October 3 (discharge, 65 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 20 and 300 second-feet and fairly well defined from 300 to 800 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages, when they are fair.

Discharge measurements of Bushkill Creek near Shoemakers during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
48	June 12	J. M. Snavely	2.62	420
49	12	do	2.60	438
50	July 18	R. E. Marsh	2.72	496
51	Aug. 6	J. M. Snavely	1.84	145

Daily Mean Gage Height, in feet, of Bushkill Creek near Shoemakers, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.51	2.17	2.49	2.50	2.36	2.30	2.88	3.35	1.89	3.80	1.87	2.47
2	1.50	2.20	2.56	2.20	2.15	2.24	2.72	3.19	1.87	3.39	1.89	2.38
3	1.55	3.22	2.90	2.22	2.28	2.18	2.62	3.01	1.82	3.09	1.84	3.32
4	2.20	4.10	2.74	2.19	2.19	2.10	2.58	2.90	1.89	2.86	1.76	3.50
5	2.19	3.74	2.74	2.22	2.13	2.12	2.56	2.78	2.52	3.40	1.68	3.13
6	1.98	3.45	2.66	2.36	2.30	2.07	2.54	2.77	3.16	3.99	1.84	2.92
7	1.86	3.19	2.70	2.29	2.42	2.05	2.52	2.65	3.04	3.52	1.94	2.81
8	1.79	2.96	4.30	2.11	2.29	2.04	2.81	2.51	2.79	3.21	1.94	2.70
9	1.72	2.84	4.10	2.14	2.38	2.03	2.71	2.42	2.76	2.94	1.89	2.55
10	1.67	2.72	3.56	2.09	2.24	2.00	2.61	2.34	3.10	2.85	1.80	2.42
11	1.60	2.65	3.28	2.02	2.18	1.96	2.53	2.34	-------	2.74	2.45	2.31
12	1.62	2.60	3.22	1.99	2.16	1.97	2.79	2.25	2.60	2.61	2.38	2.21
13	2.64	2.52	3.14	1.99	2.15	2.03	2.79	2.20	-------	2.66	2.11	2.18
14	2.52	2.42	3.34	2.03	2.20	2.37	2.83	2.13	-------	3.45	1.91	2.10
15	2.34	2.36	3.09	2.03	3.20	2.37	3.09	2.07	-------	3.55	1.80	2.03
16	2.20	2.31	3.00	1.97	2.82	2.28	2.85	2.04	-------	3.24	1.69	2.01
17	2.13	2.80	3.08	1.96	2.60	2.19	2.74	2.02	2.28	3.01	2.86	1.97
18	2.80	4.20	2.86	1.93	2.58	2.25	2.62	2.11	2.20	2.79	2.64	2.02
19	4.35	3.84	2.80	1.92	2.37	2.20	2.55	2.22	2.37	2.63	2.30	1.98
20	4.32	3.51	2.75	1.99	2.46	2.12	2.44	2.35	2.41	2.51	2.06	2.10
21	3.84	3.26	2.55	1.90	2.28	2.08	2.39	2.28	2.34	2.40	1.92	2.09
22	3.45	3.05	2.47	2.13	2.30	2.08	2.80	2.16	2.63	2.38	2.00	1.98
23	3.18	2.85	2.40	2.03	2.80	2.08	3.02	2.22	2.58	2.41	1.98	1.92
24	2.96	2.87	2.32	2.10	2.98	2.20	3.23	2.17	2.59	2.31	1.92	1.83
25	2.81	2.88	2.20	2.56	2.72	2.45	3.01	2.09	2.49	2.18	2.00	1.79
26	2.68	2.70	2.46	2.40	2.55	2.54	2.85	2.06	3.05	2.08	2.80	1.75
27	2.56	2.76	2.66	2.21	2.60	2.61	2.76	2.01	3.01	2.06	3.65	1.73
28	2.48	2.66	2.67	2.35	2.41	2.50	3.20	2.02	2.80	2.33	3.42	1.70
29	2.41	2.65	2.49	2.38	2.34	2.40	3.35	2.01	2.94	2.16	3.09	1.69
30	2.32	2.58	2.26	2.45	-------	2.96	3.45	2.00	4.25	1.98	2.89	1.72
31	2.23	-------	2.22	2.55	-------	3.12	-------	1.96	-------	1.90	2.66	-------

NOTE—Stage-discharge relation Dec. 26-30, Jan. 3-7, 22, 23 and Jan. 28 to Feb. 4 affected by ice. Gage height June 11 and 13-16 unsatisfactory.

Daily discharge, in second-feet, of Bushkill Creek near Shoemakers, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	247	398	398	150	309	580	810	153	994	147	376
2	68	267	420	267	140	288	488	718	147	810	153	353
3	76	718	580	240	150	267	443	626	133	672	139	764
4	267	1,120	511	220	170	227	443	580	153	557	117	856
5	267	948	511	220	247	227	420	534	398	810	99	672
6	183	810	466	220	309	208	420	511	718	1,080	139	580
7	144	718	488	220	353	208	398	466	626	856	170	534
8	125	603	1,220	227	309	208	534	398	534	718	170	488
9	108	557	1,120	247	353	208	488	353	511	603	153	420
10	97	488	902	227	288	190	443	331	672	557	127	353
11	84	466	764	190	267	176	420	331	600	511	376	309
12	88	443	718	187	247	180	534	288	443	443	353	267
13	466	398	672	187	247	208	534	267	400	466	227	267
14	398	353	764	208	267	331	557	247	400	810	159	227
15	331	331	672	208	718	331	672	208	360	902	127	208
16	267	309	626	180	534	309	557	208	340	718	101	190
17	247	534	672	176	443	267	511	190	309	626	557	180
18	534	1,170	557	166	443	288	443	227	267	534	466	190
19	1,260	994	534	163	331	267	420	267	331	466	309	183
20	1,220	856	511	187	376	227	376	331	353	398	208	227
21	994	764	420	156	309	227	353	309	331	353	163	227
22	810	626	376	160	309	227	534	247	466	353	190	183
23	718	557	353	160	534	227	626	267	443	353	183	163
24	603	557	309	227	626	267	718	247	443	309	163	136
25	534	580	267	420	488	376	626	227	398	267	190	125
26	488	488	240	353	420	420	557	208	626	227	534	115
27	420	511	220	267	443	443	511	190	626	208	902	110
28	398	466	220	220	353	398	718	190	534	331	810	103
29	353	466	220	190	331	353	810	190	603	247	672	101
30	309	443	240	170	-------	603	810	190	1,170	183	580	108
31	288	-------	267	160	-------	672	-------	176	-------	156	466	-------

NOTE—Discharge estimated Dec. 26-30, Jan. 3-7, 22, 23 and Jan. 28 to Feb. 4, because of ice, from weather records, study of gage height graph and comparison with similar studies for Lackawaxen River near West Hawley, McMichaels Creek near Stroudsburg and Lackawanna River at Moosic, and June 11 and 13-16, because of unsatisfactory gage height record, from discharge of Lackawaxen River near West Hawley.

Monthly discharge of Bushkill Creek near Shoemakers, for the year ending Sept. 30, 1928

(Drainage area 115 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,260	68	394	3.43	3.95
November	1,170	247	593	5.16	5.76
December	1,220	220	524	4.56	5.26
January	420	156	220	1.91	2.20
February	718	140	350	3.04	3.28
March	672	176	295	2.57	2.96
April	810	353	531	4.62	5.16
May	810	176	333	2.90	3.34
June	1,170	133	450	3.91	4.36
July	1,080	156	533	4.63	5.34
August	902	99	295	2.57	2.96
September	856	101	300	2.61	2.91
The Year	1,260	68	401	3.49	47.48

DELAWARE BASIN—STATION NO. 6

McMICHAELS CREEK NEAR STROUDSBURG

Location.—At single-span steel railroad bridge, Wilkes-Barre & Eastern R. R. car shops, about three-quarters of a mile southwest of Stroudsburg, Monroe County.

Drainage Area.—62 square miles.

Records Available.—August 10, 1911, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by H. Q. Snyder and Amos Munson.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of silt and stones. Control for medium and low stages is at a gravel and boulder bar, where the stream has a pronounced fall, about 600 feet downstream from the gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, 7.50 feet observed at 10 a. m. December 8 (discharge, about 2,080 second-feet); minimum, 2.76 feet at 10.15 a. m. October 11 (discharge, 29 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 25 and 300 second-feet and fairly well defined from 300 to 800 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages, when they are fair.

Discharge measurements of McMichaels Creek near Stroudsburg during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
53	June 13a	J. M. Snavely	3.60	171
54	13a	do	3.58	171

a Measurement made by wading 200 feet upstream from gage.

Daily Mean Gage Height, in feet, of McMichaels Creek near Stroudsburg, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.82	3.26	3.20	-------	3.16	3.30	-------	-------	-------	4.51	3.47	3.21
2	2.84	3.25	3.55	3.40	3.25	3.15	-------	-------	-------	4.22	3.44	3.19
3	2.81	4.35	4.00	3.32	-------	3.25	-------	-------	-------	4.02	3.37	4.35
4	3.65	4.60	3.90	3.29	-------	-------	-------	-------	-------	3.88	3.30	3.77
5	3.11	4.20	3.80	3.24	-------	3.30	-------	-------	-------	3.86	3.61	3.57
6	3.05	3.90	3.75	3.29	3.42	3.22	-------	-------	-------	4.47	3.72	3.51
7	2.98	3.80	3.75	3.31	3.55	3.19	-------	-------	-------	4.01	3.42	3.55
8	2.91	3.70	6.46	3.28	4.26	3.14	-------	-------	-------	3.86	3.39	3.44
9	2.88	3.60	5.05	3.25	3.90	3.20	-------	-------	-------	3.75	3.32	3.37
10	2.82	3.45	4.50	3.25	3.56	3.22	-------	-------	-------	3.68	3.28	3.33
11	2.85	3.32	4.41	3.23	3.45	-------	-------	-------	-------	3.80	3.30	3.29
12	3.95	3.40	4.25	3.24	3.32	3.25	-------	-------	-------	3.70	3.25	3.25
13	3.25	3.41	4.16	3.21	3.29	3.46	-------	-------	3.58	3.95	3.20	3.25
14	3.12	3.36	4.26	3.17	3.45	3.56	-------	-------	3.54	5.15	3.17	3.29
15	3.09	3.31	4.15	3.16	4.50	3.20	-------	-------	3.54	4.75	3.16	3.21
16	3.08	3.36	4.16	3.13	3.80	3.20	-------	-------	3.40	4.31	3.12	3.18
17	3.07	4.20	4.26	3.12	3.66	3.20	-------	-------	3.33	4.07	3.38	3.16
18	4.00	5.10	4.00	3.13	3.56	-------	-------	-------	3.30	3.93	3.53	3.15
19	5.10	4.80	4.00	3.22	-------	-------	-------	-------	3.42	3.81	3.25	3.16
20	4.75	-------	3.85	3.20	3.50	3.31	-------	-------	3.50	3.74	3.15	3.49
21	4.35	-------	3.76	3.32	3.60	3.29	-------	-------	3.38	3.63	3.14	3.19
22	4.10	-------	3.65	3.20	3.60	3.27	-------	-------	3.72	3.82	3.25	3.13
23	3.91	-------	3.46	3.10	4.60	3.20	-------	-------	3.55	5.39	3.17	3.09
24	3.80	3.80	3.40	3.45	4.35	3.20	-------	-------	3.62	4.37	3.13	3.06
25	3.70	3.60	-------	4.95	3.90	-------	-------	-------	3.58	4.06	3.15	3.05
26	3.56	3.50	3.40	3.60	3.70	3.21	-------	-------	4.80	3.91	3.63	3.05
27	3.50	3.41	3.46	3.50	3.60	-------	-------	-------	4.52	4.00	3.43	3.02
28	3.40	3.50	3.36	3.21	3.50	-------	-------	-------	4.20	3.95	3.41	3.01
29	3.40	3.56	3.32	-------	3.40	3.23	-------	-------	4.60	3.66	3.33	3.00
30	3.32	3.45	3.31	3.19	-------	3.60	-------	-------	4.80	3.58	3.28	3.04
31	3.26	-------	3.36	3.31	-------	4.40	-------	-------	-------	3.46	3.28	-------

NOTE—Gage height not observed on days of no record. Stage-discharge relation Dec. 25-30, Jan. 3-8, 20-22, Jan. 29 to Feb. 4 and Feb. 20 and 21 affected by ice.

Daily discharge, in second-feet, of McMichaels Creek near Stroudsburg, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	93	82	180	48	100	180	500	80	457	133	84
2	36	91	155	119	48	74	180	340	80	343	127	80
3	33	399	272	90	48	91	160	300	65	272	113	399
4	173	497	240	80	48	100	160	240	65	240	100	198
5	68	343	211	75	55	100	160	220	240	226	161	150
6	60	240	198	80	123	86	180	280	340	438	185	139
7	51	211	198	80	150	80	180	220	300	272	123	150
8	43	185	1,450	90	362	72	240	160	240	226	117	127
9	40	161	667	91	240	82	220	160	220	198	104	113
10	34	129	457	91	150	86	180	140	300	185	96	106
11	37	104	418	87	129	80	160	120	220	211	100	98
12	256	119	362	89	104	91	220	120	220	185	91	91
13	91	121	325	84	98	131	220	120	161	256	82	91
14	69	111	362	77	129	150	240	120	150	758	77	98
15	65	102	325	76	457	82	300	100	150	580	76	84
16	63	111	325	71	211	82	280	80	139	380	69	79
17	62	343	362	69	173	82	220	80	106	290	115	76
18	272	712	272	71	150	80	180	120	100	256	150	74
19	667	580	272	86	120	80	160	160	123	211	91	76
20	580	460	226	75	110	102	160	220	139	198	74	137
21	399	340	198	65	110	98	140	160	115	173	72	80
22	307	280	173	65	161	95	220	140	185	211	91	71
23	240	240	131	66	497	82	380	180	150	853	77	65
24	211	211	119	129	399	82	420	140	161	399	71	61
25	185	161	100	667	240	65	340	120	161	290	74	60
26	150	139	90	161	185	84	280	100	580	240	173	60
27	139	121	80	139	161	80	240	80	457	272	125	55
28	119	139	80	84	139	80	340	80	343	256	121	54
29	119	150	80	65	119	87	460	80	497	173	106	53
30	104	129	90	55	-------	161	500	80	580	161	96	58
31	93	-------	111	50	-------	418	-------	80	-------	131	96	-------

NOTE—Discharge estimated Nov. 20-23, Jan. 1, Feb. 5, 19, Mar. 4, 11, 18, 19, 25, 27, 28 and Apr. 1 to June 12, because of no gage height record, from weather records, study of gage height graph and discharge of Lackawaxen River near West Hawley and Bushkill Creek near Shoemakers, and Dec. 25-30, Jan. 3-8, 20-22, Jan. 29 to Feb. 4 and Feb. 20 and 21, because of ice, from weather records, study of gage height graph and comparison with similar studies for Bushkill Creek near Shoemakers Tunkhannock Creek at Dixon and Lackawanna River at Moosic.

Monthly discharge of McMichaels Creek near Stroudsburg, for the year ending Sept. 30, 1928

(Drainage area 62 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	580	33	155	2.50	2.88
November	712	91	234	3.77	4.21
December	1,450	80	272	4.39	5.06
January	180	50	107	1.73	1.99
February	497	48	171	2.75	2.97
March	418	65	102	1.65	1.90
April	500	140	243	3.92	4.37
May	500	80	163	2.63	3.03
June	580	65	222	3.58	3.99
July	853	131	301	4.85	5.59
August	185	69	106	1.71	1.97
September	399	53	102	1.65	1.84
The Year	1,450	33	181	2.92	39.80

DELAWARE BASIN—STATION NO. 7

DELAWARE RIVER AT BELVIDERE, N. J.

Location.—At Belvidere, Warren County, just below mouth of Pequest River.

Drainage Area.—4,540 square miles.

Records Available.—October 27, 1922, to September 30, 1928.

Equipment.—Inclined staff gage on left bank bolted to downstream side of storm sewer outlet at foot of Second Street, Belvidere.

Discharge measurements made by boat 1,000 feet below gage for low water and from highway bridge ½ mile upstream during high water. Pequest River measured separately when highway bridge is used.

Channel and Control.—Channel is heavy gravel and boulders. Control is ledge and boulders about ¾ mile below gage, known as Little Foul Rift.

Extremes of Discharge.—Maximum stage recorded during year, 16.80 feet at 7 a. m. October 20 (discharge, about 84,400 second-feet); minimum stage recorded, 3.40 feet at 7 a. m. October 3 (discharge 2,010 second-feet).

1922-1928: Maximum stage determined by levels from high water mark, 19.3 feet at 2 p. m. October 1, 1924 (discharge, about 118,000 second-feet); minimum stage recorded, 2.45 feet in July and August 1923 (discharge, 895 second-feet).

Accuracy.—Stage discharge relation permanent, not affected by ice this year. Rating curve well defined between 900 and 60,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Results good.

Cooperation.—Record furnished by United States Geological Survey Office, Trenton, New Jersey.

Discharge measurements of Delaware River at Belvidere, N. J., during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
19	July 3	R. E. Marsh	9.50	27,200

Daily discharge, in second-feet, of Delaware River at Belvidere, N. J., for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,360	7,610	21,000	16,400	5,690	8,680	15,900	32,200	7,960	63,200	7,610	10,200
2	2,360	6,940	18,400	18,400	5,690	8,320	13,200	32,200	7,610	39,200	7,270	10,200
3	2,180	10,600	21,000	13,700	5,400	7,960	12,300	25,600	6,940	24,400	7,270	10,600
4	3,370	37,700	23,300	9,050	5,120	6,300	11,900	21,600	6,300	18,900	7,610	17,900
5	15,900	55,200	18,400	8,320	5,990	5,690	11,400	18,400	8,320	16,400	6,940	15,000
6	12,300	37,000	16,400	7,960	6,620	5,400	11,900	16,400	19,400	30,100	7,270	11,900
7	7,610	25,600	15,000	8,320	6,940	5,120	13,200	17,900	37,700	27,500	8,680	10,200
8	6,300	21,000	27,500	9,430	8,320	4,850	15,000	16,900	30,100	18,900	11,400	9,050
9	5,690	16,900	64,000	9,430	9,050	5,120	18,900	14,600	20,500	14,600	9,430	8,320
10	5,120	14,300	41,300	9,810	13,700	4,580	16,400	12,800	19,400	12,800	8,320	6,940
11	4,850	13,700	28,100	9,050	13,200	4,580	14,100	11,000	21,600	11,900	11,400	6,620
12	4,070	13,200	23,300	7,960	9,810	4,580	13,200	10,200	15,900	11,000	12,800	6,300
13	6,620	13,700	22,700	7,270	7,610	5,690	17,400	9,050	13,200	11,400	9,430	5,690
14	22,100	11,400	30,800	6,940	6,940	7,960	15,900	7,610	11,400	17,400	7,960	5,990
15	18,900	11,400	40,600	7,610	15,000	16,400	19,900	7,270	10,600	26,900	7,270	5,990
16	13,700	10,600	31,500	6,940	29,400	13,700	22,700	7,270	10,200	20,500	5,690	5,400
17	11,000	10,600	26,200	6,940	17,900	10,200	17,400	6,940	8,320	15,500	6,940	4,580
18	14,100	30,100	22,100	5,990	13,700	8,680	14,600	6,300	7,610	11,900	10,600	4,850
19	50,800	58,800	17,400	5,990	11,900	7,960	14,100	7,610	7,270	10,200	10,200	4,580
20	84,000	35,600	15,500	6,940	9,050	7,960	11,000	12,300	10,600	9,050	7,960	4,580
21	58,800	25,000	14,100	5,400	8,680	7,270	10,200	16,900	12,800	7,270	6,940	5,400
22	40,600	19,900	12,800	4,320	6,620	7,270	11,900	15,900	12,800	7,610	7,960	4,850
23	28,100	17,900	12,300	4,320	9,430	7,270	17,900	14,600	14,100	10,200	7,610	4,580
24	21,600	15,900	11,000	4,070	15,000	6,940	32,800	25,600	14,100	12,800	7,270	3,830
25	17,400	15,900	9,050	8,680	22,100	9,810	37,000	17,400	13,200	10,600	6,940	4,070
26	15,000	16,900	7,270	13,200	15,000	19,400	26,200	13,700	20,500	7,610	9,050	4,070
27	13,200	15,500	6,940	11,400	10,600	21,600	21,600	11,400	21,600	7,610	25,000	4,070
28	11,900	18,400	7,270	7,610	9,810	24,400	21,600	10,200	21,000	9,810	25,000	3,830
29	10,600	22,700	7,960	5,120	9,050	17,900	29,400	10,200	17,900	15,900	17,900	3,830
30	8,680	23,800	8,680	5,400	-------	15,900	32,200	9,050	43,600	11,400	14,100	3,830
31	7,610	-------	10,600	5,690	-------	17,400	-------	8,320	-------	9,430	11,400	-------

Monthly discharge of Delaware River at Belvidere, N. J., for the year ending Sept. 30, 1928

(Drainage area 4,540 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	84,000	2,180	17,000	3.74	4.31
November	58,800	6,940	21,100	4.65	5.19
December	64,000	6,940	20,400	4.49	5.18
January	18,400	4,070	8,310	1.83	2.11
February	29,400	5,120	10,300	2.38	2.57
March	24,400	4,580	9,840	2.17	2.50
April	37,000	10,200	18,000	3.96	4.42
May	32,200	6,300	14,400	3.17	3.66
June	43,600	6,300	15,300	3.48	3.88
July	63,200	7,270	16,300	3.70	4.27
August	25,000	5,690	10,000	2.20	2.54
September	17,900	3,830	6,910	1.52	1.70
The Year	84,000	2,180	14,100	3.10	42.33

DELAWARE BASIN—STATION NO. 8

LEHIGH RIVER AT TANNERY

Location.—At single-span steel highway bridge, Tannery, Carbon County.

Drainage Area.—335 square miles.

Records Available.—June 23, 1914, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by G. D. Heimbach. Elevation of gage zero 1,029.41 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and large stones. Control is at a riffle about 300 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 13.00 feet at 3 a. m. June 30, (discharge, about 9,540 second-feet); minimum, 1.50 feet at 8 a. m. October 2 (discharge, 125 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 100 and 2,500 second feet and fairly well defined above 2,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for discharge above 2,500 second-feet, when they may be only fair.

Discharge measurements of Lehigh River at Tannery during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
34	Aug. 9	J. M. Snavely	2.31	557
35	Sept. 13a	R. E. Marsh	1.80	236
36	21a	do	2.22	385

a Measurement made by wading 700 feet upstream from gage.

Daily Mean Gage Height, in feet, of Lehigh River at Tannery, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.72	2.96	3.89	4.09	2.21	2.69	4.66	6.51	2.55	7.11	2.58	2.09
2	1.52	2.94	3.93	3.60	2.22	2.64	4.36	5.53	2.38	5.45	2.58	1.92
3	1.64	3.80	4.60	3.10	2.19	2.56	4.14	5.05	2.20	4.82	2.49	2.00
4	4.63	5.05	4.29	2.97	2.65	2.35	4.02	4.83	2.45	4.32	2.34	3.00
5	4.45	4.88	4.05	2.88	3.05	2.16	3.98	4.61	4.90	4.71	2.17	2.60
6	3.65	4.48	3.75	2.82	2.68	2.16	3.96	5.03	5.35	5.45	2.51	2.42
7	3.15	3.95	3.85	2.75	2.61	2.16	4.04	4.68	5.10	5.10	2.48	2.30
8	2.90	3.70	7.40	2.69	3.02	2.13	5.24	4.48	4.80	4.60	2.39	2.07
9	2.93	3.49	6.35	2.82	4.05	2.13	4.96	4.28	4.58	4.00	2.27	1.96
10	2.60	3.32	5.45	2.88	3.70	2.19	4.51	3.90	4.85	3.89	2.17	1.92
11	2.38	3.26	5.05	2.68	3.35	2.04	4.23	3.66	4.40	3.90	2.21	1.86
12	2.57	3.20	4.75	2.69	2.90	2.17	4.85	3.45	4.02	3.92	2.19	1.83
13	6.51	3.15	5.40	2.66	2.65	2.35	4.85	3.23	3.75	4.00	2.50	1.82
14	5.75	3.11	5.80	2.69	3.00	3.12	4.95	2.98	3.52	7.58	2.20	1.85
15	4.85	3.02	5.25	2.64	5.65	3.32	5.07	2.85	3.58	6.32	1.90	1.81
16	4.15	2.89	4.95	2.64	4.55	3.33	4.84	2.82	3.25	5.10	1.83	1.72
17	4.12	3.93	4.98	2.61	4.05	3.12	4.58	2.75	2.94	4.60	1.92	1.73
18	5.78	8.83	4.40	2.53	3.55	2.95	4.38	2.71	2.86	4.05	2.32	1.76
19	9.17	6.56	4.15	2.52	3.16	2.85	4.11	4.25	3.16	3.78	2.48	1.79
20	8.85	5.14	3.95	2.55	3.22	2.65	3.81	4.25	3.62	3.75	2.28	2.13
21	7.25	4.96	3.78	2.35	2.95	2.59	3.58	4.08	3.55	3.58	2.03	2.28
22	5.88	4.68	3.58	2.17	2.42	2.52	4.13	3.85	4.06	3.50	2.06	2.21
23	5.15	4.30	3.30	2.16	3.70	2.51	5.08	3.72	3.92	4.40	2.08	2.08
24	4.95	4.15	2.95	2.12	4.80	2.88	5.13	3.40	4.12	4.00	2.02	1.87
25	4.30	4.18	2.75	3.55	3.95	4.18	4.97	3.12	4.32	3.62	1.97	1.83
26	3.85	3.85	2.95	3.20	3.38	4.58	4.63	2.98	5.22	3.32	2.44	1.77
27	3.65	4.04	3.04	2.75	3.15	4.48	4.39	2.88	5.20	3.10	3.56	1.74
28	3.45	4.15	2.98	2.50	2.97	4.37	4.65	2.68	4.80	2.85	3.20	1.76
29	3.26	4.12	2.95	2.29	2.92	3.89	4.88	2.68	7.85	2.72	2.71	1.86
30	3.12	4.02	3.30	2.22	-------	4.84	5.15	2.69	11.23	2.64	2.48	1.91
31	3.02	-------	3.65	2.17	-------	5.19	-------	2.66	-------	2.55	2.31	-------

NOTE—Stage-discharge relation Dec. 26-28, Feb. 1, 2, 20 and 21 affected by ice.

Daily discharge, in second-feet, of Lehigh River at Tannery, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	181	638	1,110	1,230	300	525	1,640	3,180	465	3,750	485	300
2	130	638	1,110	955	300	505	1,420	2,260	405	2,180	485	241
3	160	1,060	1,560	705	335	465	1,230	1,860	335	1,710	445	265
4	1,560	1,860	1,360	638	505	389	1,170	1,710	425	1,360	388	660
5	1,420	1,780	1,170	615	660	318	1,170	1,560	1,780	1,640	318	485
6	955	1,490	1,060	570	525	318	1,170	1,860	2,180	2,180	445	405
7	755	1,170	1,060	548	485	318	1,170	1,640	1,940	1,940	445	370
8	615	1,000	4,040	525	660	318	2,020	1,490	1,710	1,560	405	282
9	638	905	3,090	570	1,170	318	1,860	1,360	1,560	1,170	352	253
10	485	805	2,180	615	1,000	335	1,490	1,110	1,710	1,110	318	241
11	405	805	1,860	525	855	282	1,290	1,000	1,420	1,110	335	223
12	465	755	1,710	525	615	318	1,710	855	1,170	1,110	335	214
13	3,180	755	2,180	505	505	388	1,710	755	1,060	1,170	445	211
14	2,520	705	2,520	525	660	705	1,860	660	905	4,230	335	220
15	1,710	660	2,020	505	2,340	805	1,940	592	955	3,000	235	208
16	1,290	615	1,860	505	1,560	805	1,710	570	755	1,940	214	181
17	1,230	1,110	1,860	485	1,170	705	1,560	548	638	1,560	241	184
18	2,520	5,370	1,420	465	955	638	1,420	525	592	1,170	370	193
19	5,750	3,270	1,290	445	755	592	1,230	1,290	755	1,060	445	202
20	5,370	1,940	1,170	465	548	505	1,060	1,290	955	1,060	370	318
21	3,840	1,860	1,060	388	445	485	955	1,230	955	955	282	370
22	2,610	1,640	955	318	405	445	1,230	1,060	1,230	905	282	335
23	2,020	1,360	805	318	1,000	445	1,940	1,000	1,110	1,420	300	300
24	1,860	1,290	638	300	1,710	615	1,940	855	1,230	1,170	265	226
25	1,360	1,290	548	955	1,170	1,290	1,860	705	1,360	955	256	214
26	1,060	1,060	525	755	855	1,560	1,560	660	2,020	805	425	196
27	955	1,170	525	548	755	1,490	1,420	615	2,020	705	955	187
28	855	1,290	548	445	638	1,420	1,560	525	1,710	592	755	193
29	805	1,230	638	370	615	1,110	1,780	525	4,420	525	525	223
30	705	1,170	805	335	-------	1,710	2,020	525	7,740	505	445	238
31	660	-------	955	318	-------	2,020	-------	505	-------	465	370	-------

NOTE—Discharge Dec. 26-28, Feb. 1, 2, 20 and 21 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Lehigh River at Bethlehem.

Monthly discharge of Lehigh River at Tannery, for the year ending Sept. 30, 1928

(Drainage area 335 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	5,750	130	1,550	4.63	5.34
November	5,370	615	1,360	4.06	4.53
December	4,040	525	1,410	4.21	4.85
January	1,230	300	547	1.63	1.88
February	2,340	300	810	2.42	2.61
March	2,020	282	714	2.13	2.46
April	2,020	955	1,540	4.60	5.13
May	3,180	505	1,110	3.31	3.82
June	7,740	335	1,520	4.54	5.06
July	4,230	465	1,450	4.33	4.99
August	955	214	396	1.18	1.36
September	660	181	271	.809	.90
The Year	7,740	130	1,060	3.16	42.93

DELAWARE BASIN—STATION NO. 9

LITTLE LEHIGH CREEK AT ALLENTOWN

Location.—At four-span stone arch highway bridge, Lehigh Street, Allentown, Lehigh County, about 2,500 feet upstream from the confluence of Little Lehigh and Jordan Creeks.

Drainage Area.—106 square miles.

Records Available.—April 29, 1921, to September 30, 1928.

Gage.—Vertical staff attached to downstream end of left pier; read to hundredths twice daily by Nelson Schantz; during high stages more frequently.

Discharge Measurements.—Made from downstream side of trolley bridge, which is just downstream from the gage, or by wading.

Channel and Control.—Channel is confined by retaining walls and brick buildings. Bed is composed of small gravel. Control is at a riffle a short distance downstream from gage, where the bed is composed of sand and gravel deposited July 20, 1921; shifts occasionally.

Extremes of Stage.—Maximum gage height during the year estimated from hydrograph, 6.90 feet at 8 a. m. February 15; minimum 1.00 foot at 9 a. m. October 1.

Ice.—Stage-discharge relation affected by ice for first time since the establishment of station.

Cooperation.—Station is maintained in cooperation with the American Steel and Wire Company, Allentown, Pennsylvania.

Discharge measurements of Little Lehigh Creek at Allentown during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
19	Oct. 26a	Geo. Weber, Jr.	1.34	135
20	26a	do	1.34	138
21	July 31b	do	1.67	190
22	Sept. 12b	J. M. Snavely	1.60	186

a Measurement made by wading 6 feet downstream from gage.
b Measurement made from downstream side of highway bridge.

Daily Mean Gage Height, in feet, of Little Lehigh Creek at Allentown, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.05	1.25	-------	2.05	1.49	2.00	1.75	2.42	1.55	2.25	1.70	1.65
2	1.05	1.28	1.70	1.64	1.48	1.88	1.78	2.18	1.55	1.65	1.68	1.65
3	1.15	1.70	2.00	1.65	1.45	1.90	1.68	2.00	1.52	1.60	1.62	2.02
4	1.45	1.75	1.60	1.62	1.44	1.75	1.68	1.98	1.58	1.55	1.75	1.85
5	1.18	1.40	2.15	1.60	1.98	1.80	1.65	1.92	1.85	1.95	1.70	1.65
6	1.18	1.38	2.00	1.60	1.80	1.68	1.62	1.90	2.90	3.90	3.02	1.70
7	1.10	1.36	1.90	1.63	1.58	1.70	1.62	1.88	2.08	2.45	2.80	1.80
8	1.05	1.35	4.50	1.60	3.50	1.70	1.70	1.80	1.70	1.90	2.00	1.70
9	1.14	1.32	3.70	1.68	3.72	1.70	1.63	1.80	1.68	1.78	1.85	1.65
10	1.19	1.30	2.45	1.65	2.78	1.72	1.60	1.80	2.22	1.72	1.78	1.65
11	1.08	1.30	2.35	1.66	2.10	1.70	1.60	1.78	1.88	1.75	1.88	1.62
12	1.20	1.30	2.30	1.62	1.92	1.83	2.05	1.82	1.68	1.68	1.90	1.55
13	2.00	1.28	2.35	1.62	1.80	2.00	1.80	1.70	1.65	2.25	1.80	1.58
14	1.25	1.30	2.65	1.61	2.00	2.10	1.82	1.65	1.65	3.75	1.70	1.52
15	1.18	1.30	2.40	1.60	4.66	1.88	1.90	1.65	1.70	3.70	1.68	1.52
16	1.12	1.30	2.60	1.60	2.42	1.78	1.72	1.65	1.60	2.52	1.65	1.55
17	1.12	1.67	2.55	1.60	2.12	1.78	1.65	1.65	1.55	2.22	2.55	1.58
18	1.42	3.81	2.11	1.58	2.12	1.95	1.65	1.65	1.56	2.05	2.50	1.52
19	3.58	1.68	1.90	1.58	1.88	1.88	1.65	2.18	1.80	1.92	1.85	1.55
20	3.80	1.46	1.92	1.88	1.90	1.80	1.60	2.50	1.58	2.00	1.80	1.68
21	2.05	1.40	1.92	1.38	1.75	1.80	1.58	2.02	1.60	1.82	1.72	1.65
22	1.52	-------	1.99	1.49	1.80	1.80	1.95	1.80	1.75	1.88	1.78	1.60
23	1.40	-------	1.90	1.52	3.90	1.80	2.08	1.70	1.65	1.90	1.74	1.52
24	1.35	-------	1.78	1.60	3.80	1.78	2.25	1.68	1.75	1.88	1.71	1.52
25	1.35	-------	1.71	2.50	2.38	1.80	1.92	1.65	1.65	1.78	2.02	1.52
26	1.32	-------	1.68	1.58	2.02	1.78	1.78	1.70	2.15	1.70	1.98	1.50
27	1.28	-------	1.68	1.55	2.02	1.75	1.78	1.68	1.92	2.15	1.80	1.48
28	1.28	-------	1.68	1.52	1.98	1.65	3.35	1.68	1.70	2.30	1.74	1.48
29	1.26	-------	1.78	1.45	1.95	1.65	3.40	1.58	2.32	1.80	1.69	1.48
30	1.27	-------	1.90	1.50	-------	2.22	2.75	1.55	5.10	1.75	1.65	1.52
31	1.26	-------	1.82	1.50	-------	1.95	------	1.60	-------	1.65	1.68	-------

NOTE—Gage height Nov. 22 to Dec. 1 not observed because of repairs being made to bridge. Stage-discharge relation Dec. 20-24, Jan. 4-7, 22, 23 and Jan. 30 to Feb. 3 affected by ice.

DELAWARE BASIN—STATION NO. 10

LEHIGH RIVER AT BETHLEHEM

Location.—At nine-span steel highway bridge, three spans over the normal river channel, New Street, Bethlehem, Northampton County., about 1,200 feet upstream from the mouth of Monocacy Creek.

Drainage Area.—1,240 square miles.

Records Available.—September 22, 1902, to February 13, 1905, and April 26, 1909, to September 30, 1928.

Gages.—Standard chain attached to downstream side of New Street Bridge was used October 1 to November 3 and August 13 to September 30. Elevation of gage zero 210.64 feet, United States Geological Survey datum. Standard chain attached to downstream side of Hill to Hill Bridge, about 1,800 feet upstream from the New Street Bridge, was used December 3 to August 12. Elevation of gage zero 213.11 feet, United States Geological Survey datum. Gages read by Thomas A. Roach and Raymond R. Rueter.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Right bank is high and not subject to overflow; left is low and overflows during high stages. Bed is composed of sand and gravel. Control is at a riffle about 1,000 feet downstream from the gage; shifts occasionally. Monocacy Creek enters from left just downstream from the low-water control.

Extremes of Discharge.—New Street Bridge.—Maximum stage during the year, 13.4 feet at 8 a. m. June 30, estimated from Hill to Hill Bridge gage heights (discharge, about 30,700 second-feet); minimum, 1.54 feet on October 2 (discharge, 480 second-feet).

Ice.—Stage-discharge relation seldom affected by ice.

Diversions.—During navigation season water is diverted past the gage through the Lehigh Coal and Navigation Company Canal, which follows the left bank and passes under the left span of bridge.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 4,000 second-feet and fairly well defined between 4,000 and 31,000 second-feet. Gages read to hundredths twice daily. Daily discharge ascertained by appyling

daily mean gage height to rating table. Results good except for low stages, when they may be only fair owing to uncertain amount of water diverted by canal, and for estimated periods.

Discharge measurements of Lehigh River at Bethlehem during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
75	Oct. 27	Geo. Weber	3.69	3,400
76	Nov. 30	do	3.56	2,980
77	July 31	do	2.80	1,870
78	Sept. 12	J. M. Snavely	2.25	1,260
79	13	do	2.25	1,260

Daily Mean Gage Height, in feet, of Lehigh River at Bethlehem, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.60	2.96	-------	3.70	2.98	3.35	4.30	5.94	2.63	7.04	-------	-------
2	1.54	2.90	-------	3.30	2.95	3.26	4.08	5.26	2.49	5.35	2.98	2.36
3	1.69	3.82	-------	3.34	2.86	3.13	3.79	4.76	2.67	4.70	2.84	2.40
4	4.38	-------	4.26	3.06	2.88	3.02	3.71	4.40	2.56	4.28	2.79	3.20
5	4.11	-------	4.36	3.05	3.56	3.03	3.63	4.10	3.21	4.32	2.84	3.15
6	2.96	-------	4.10	3.13	3.40	2.81	3.59	4.10	4.51	6.52	3.70	2.94
7	2.61	-------	3.98	3.25	3.22	2.83	3.53	4.02	4.55	5.12	3.60	2.80
8	2.39	-------	7.43	3.08	4.04	2.78	4.19	3.86	4.01	4.44	3.52	2.61
9	2.44	-------	7.40	3.20	4.53	2.78	3.92	3.68	3.81	4.08	3.02	2.54
10	2.29	-------	5.65	3.08	3.89	2.95	3.90	3.51	4.43	3.86	2.88	2.51
11	2.18	-------	4.94	3.02	3.53	2.73	3.45	3.42	3.93	3.70	2.82	2.27
12	2.20	-------	4.87	3.02	3.36	2.83	4.10	3.35	3.67	3.63	2.68	2.22
13	5.28	-------	4.72	2.95	3.11	3.10	4.07	3.20	3.50	3.72	2.50	2.22
14	5.14	-------	5.26	2.96	3.30	3.02	4.17	3.12	3.44	5.57	2.54	2.23
15	4.05	-------	4.89	2.94	5.95	3.75	4.75	3.12	3.49	5.53	2.34	2.10
16	3.22	-------	4.75	2.91	4.52	3.25	4.41	3.07	3.33	4.88	2.26	2.10
17	3.28	-------	4.95	2.90	4.01	3.20	4.16	3.00	3.17	4.32	2.33	2.00
18	4.30	-------	4.54	2.84	3.87	3.32	3.99	2.98	3.10	3.91	3.20	1.94
19	8.15	-------	4.06	2.85	3.47	3.19	3.78	2.63	3.12	3.67	3.30	2.05
20	9.65	-------	4.10	3.28	3.43	3.12	3.60	3.82	3.21	3.65	2.68	2.29
21	7.52	-------	3.90	2.66	3.15	3.05	3.45	3.70	3.07	3.51	2.50	2.30
22	6.15	-------	3.79	3.03	3.03	3.04	3.95	3.52	3.33	3.51	2.64	-------
23	5.35	-------	3.66	2.88	4.82	3.00	4.37	3.45	3.20	4.51	2.50	2.05
24	4.78	-------	3.58	2.86	5.52	3.33	4.09	3.33	3.27	3.98	2.41	1.97
25	-------	-------	3.26	4.30	4.41	3.62	4.47	3.19	3.45	3.50	2.40	2.06
26	-------	-------	3.32	3.79	3.87	3.60	4.19	3.16	5.00	3.33	2.59	2.08
27	3.71	-------	3.20	3.38	3.65	3.78	3.97	3.19	4.89	3.39	3.02	1.98
28	3.48	-------	3.27	3.26	3.61	3.54	5.10	3.10	4.40	3.33	2.98	1.91
29	3.33	-------	3.45	3.02	3.49	3.60	5.70	3.01	5.54	3.13	2.88	1.86
30	3.22	-------	3.56	2.99	-------	3.57	5.64	2.97	10.80	3.00	2.66	2.08
31	3.10	-------	3.45	3.02	-------	4.81	-------	3.01	-------	2.96	2.75	-------

NOTE—Gage heights observed at New Street Bridge from Oct. 1 to Nov. 3 and Aug. 13 to Sept. 30 and at Hill to Hill Bridge from Dec. 3 to Aug. 12. Gage Height Oct. 25 and 26 unsatisfactory and Nov. 4 to Dec. 3, Aug. 1, Sept. 1 and 22 not observed. Gage height Dec. 20-24, 26, 28-30, Jan. 3, 5-7, 22, 23 and Jan. 30 to Feb. 3 affected by ice.

Daily discharge, in second-feet, of Lehigh River at Bethlehem, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	530	2,140	2,800	3,460	1,600	2,680	5,200	10,200	1,320	13,700	1,800	1,500
2	480	2,010	3,000	2,580	1,600	2,480	4,600	8,260	1,060	8,580	1,980	1,320
3	630	3,480	5,000	2,200	1,600	2,280	3,720	6,700	1,320	6,400	1,680	1,380
4	4,600	5,000	5,200	2,080	1,780	1,980	3,460	5,500	1,160	5,200	1,590	2,430
5	4,030	4,800	5,500	2,200	3,220	2,080	3,220	4,600	2,380	5,200	1,680	2,430
6	2,140	4,600	4,600	2,000	2,790	1,590	3,220	4,600	5,800	12,100	3,460	2,010
7	1,620	4,600	4,300	2,000	2,380	1,680	3,000	4,300	6,100	7,620	3,220	1,880
8	1,380	4,200	14,900	2,180	4,300	1,590	4,900	4,000	4,800	5,500	3,000	1,620
9	1,440	3,800	14,900	2,380	5,800	1,590	4,000	3,460	3,720	4,600	1,980	1,500
10	1,270	3,400	9,220	2,180	4,000	1,880	4,000	3,000	5,500	4,000	1,780	1,500
11	1,160	3,000	7,000	1,980	3,000	1,500	2,900	2,790	4,000	3,460	1,590	1,220
12	1,160	2,400	7,000	1,980	2,680	1,680	4,600	2,680	3,460	3,220	1,410	1,160
13	6,530	2,200	6,400	1,880	2,180	2,180	4,600	2,380	3,000	3,460	1,500	1,160
14	6,070	2,000	8,260	1,880	2,580	4,000	4,900	2,180	2,900	9,220	1,500	1,220
15	3,840	2,000	7,000	1,880	10,500	3,720	6,700	2,180	3,000	8,900	1,320	1,050
16	2,430	1,600	6,700	1,780	5,800	2,480	5,500	2,080	2,680	7,000	1,220	1,050
17	2,590	3,000	7,300	1,780	4,300	2,380	4,900	1,960	2,280	5,200	1,320	940
18	4,410	16,000	5,800	1,680	4,000	2,580	4,300	1,980	2,180	4,000	2,430	885
19	14,400	10,000	4,600	1,680	2,900	2,380	3,720	3,220	2,180	3,460	2,590	995
20	18,500	8,500	3,400	2,560	2,900	2,180	3,220	3,720	2,380	3,220	1,750	1,270
21	12,500	7,000	3,200	1,320	2,280	2,080	2,900	3,460	2,080	3,000	1,500	1,270
22	8,830	5,500	3,200	1,600	2,080	2,080	4,300	3,000	2,680	3,000	1,620	1,200
23	6,760	4,600	2,800	1,600	6,700	1,980	5,500	2,900	2,380	5,800	1,500	995
24	5,410	4,600	2,800	1,680	8,900	2,680	6,400	2,580	2,480	4,000	1,380	885
25	4,200	4,400	2,480	5,200	5,500	3,220	5,800	2,380	2,900	3,000	1,380	995
26	3,600	4,000	2,400	3,720	4,000	3,220	4,900	2,280	7,300	2,680	1,620	1,050
27	3,300	4,000	2,380	2,790	3,220	3,720	4,300	2,380	7,000	2,790	2,140	940
28	2,940	3,800	2,400	2,480	3,220	3,000	7,620	2,180	5,500	2,680	2,140	830
29	2,590	3,800	2,400	1,980	3,000	3,220	9,540	1,980	8,900	2,280	2,010	780
30	2,430	3,400	2,600	2,000	-------	3,220	9,220	1,880	25,700	1,980	1,750	1,050
31	2,280	-------	2,900	1,800	-------	6,700	-------	1,980	-------	1,880	1,880	-------

NOTE—Discharge does not include the water diverted past the gage through the Lehigh Coal and Navigation Company Canal. Canal was closed Nov. 20 to Mar. 25. Discharge Oct. 1 to Nov. 3 and Aug. 13 to Sept. 30, determined from gage heights observed at the New Street Bridge. Discharge estimated Oct. 25 and 26, because of unsatisfactory gage height record, and Nov. 4 to Dec. 3, Aug. 1, Sept. 1 and 22, because of no gage height record, from weather records, study of gage height graph and Allentown-Bethlehem gage height relation curve. Discharge Dec. 20-24, 26, 28-30, Jan. 8, 5-7, 22, 23 and Jan. 30 to Feb. 3 estimated, because of ice, from weather records, study of gage height graph and discharge of Lehigh River at Tannery and Delaware River at Riegelsville.

Monthly discharge of Lehigh River at Bethlehem, for the year ending Sept. 30, 1928

(Drainage area 1,240 square miles)

	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	18,500	480	4,320	3.48	4.01
November	16,000	1,600	4,460	3.60	4.02
December	14,900	2,380	5,240	4.23	4.88
January	3,460	1,320	2,210	1.78	2.05
February	10,500	1,600	3,750	3.02	3.26
March	6,700	1,500	2,580	2.08	2.40
April	9,540	2,900	4,840	3.90	4.35
May	10,200	1,880	3,450	2.78	3.20
June	25,700	1,060	4,250	3.43	3.83
July	13,700	1,880	5,070	4.09	4.72
August	3,460	1,220	1,860	1.50	1.73
September	2,430	780	1,280	1.03	1.15
The Year	25,700	480	3,610	2.91	39.60

NOTE—Discharge and run-off do not include the water diverted past the gage through the Lehigh Coal and Navigation Company Canal. Canal was closed Nov. 20 to Mar. 25.

DELAWARE BASIN—STATION NO. 11

DELAWARE RIVER AT RIEGELSVILLE

Location.—At suspension bridge between Riegelsville, Warren County, N. J., and Riegelsville, Bucks County, Pa., 600 feet above mouth of Musconetcong River and 9 miles below Lehigh River.

Drainage Area.—6,190 square miles.

Records Available.—July 3, 1906, to September 30, 1928.

Equipment.—Water-stage recorder on left bank (New Jersey side) 20 feet above bridge. Discharge measurements made from bridge.

Channel and Control.—Control, rock outcrop and large boulders; practically permanent.

Extremes of Discharge.—Maximum stage during year from water-stage recorder, 21.3 feet at 8 a. m. October 20 (discharge, 107,000 second-feet); minimum stage, 2.70 feet at 4 p. m. October 3 (discharge, 2,600 second-feet). Not including flow in canal.

1906-1928: Maximum stage recorded, 25 feet March 28, 1913 (discharge, about 144,000 second-feet); minimum stage recorded 1.55 feet at 8 a. m. September 20, 1908 (discharge, 870 second-feet). Not including flow in canal.

The flood of October 10-11, 1903, reached a stage of 35.9 feet, determined by levels from three good flood marks. Maximum discharge during this flood has been estimated 275,000 second-feet at Riegelsville from observations made at Lambertville.

Diversions and Regulation.—The Delaware Division of the Pennsylvania Canal diverts about 230 second-feet from Lehigh River near its mouth from about the last of March to the middle of December each year. Daily distribution of flow affected slightly by water powers upstream.

Accuracy.—Stage-discharge relation permanent, not affected by ice this year. Rating curve well defined between 1,000 and 100,000 second-feet. Operation of recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height as found by inspecting graph, using a triangle to balance the areas above and below the mean height; or, for days of considerable fluctuation, by averaging the results obtained by applying the gage heights for hourly or other regular intervals to the rating table. Records good.

Cooperation.—Record furnished by United States Geological Survey Office, Trenton, New Jersey.

Discharge measurements of Delaware River at Riegelsville during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
51	Oct. 4	W. R. Voght	3.35	4,070
52	Dec. 6	do	8.71	23,900
53	July 19	R. E. Marsh	6.66	15,600

Discharge measurements of Pennsylvania Canal at Riegelsville during the year ending Sept. 30, 1928

Date	Made by	Discharge
		Sec. ft.
Oct. 4	W. R. Voght	217
Dec. 6	do	4.8
July 19	R. E. Marsh	222

Daily discharge, in second-feet, of Delaware River at Riegelsville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,200	10,000	25,900	20,400	8,170	12,500	24,500	43,300	10,000	78,000	10,800	14,100
2	3,080	9,410	23,600	21,200	7,860	11,800	19,900	42,200	9,410	50,000	10,000	12,500
3	2,840	13,800	27,400	16,500	7,560	11,100	17,700	35,100	8,790	35,300	9,720	12,500
4	5,490	38,300	29,900	11,100	7,560	9,720	16,100	29,400	8,170	26,900	9,720	20,400
5	15,600	59,800	26,400	9,720	9,720	9,100	15,700	25,400	10,400	24,000	9,720	19,400
6	15,300	45,100	24,500	10,000	10,800	8,170	15,700	22,600	24,100	39,800	11,800	15,700
7	10,000	33,300	22,200	10,800	9,410	7,860	17,300	23,600	44,300	40,000	12,900	13,300
8	7,860	26,400	41,900	11,800	15,000	7,560	19,000	22,600	38,000	28,400	13,700	11,800
9	7,260	22,200	78,200	12,200	17,300	7,560	23,600	19,000	27,900	21,700	12,200	10,800
10	6,950	19,400	57,400	12,200	17,700	6,950	22,200	16,900	26,900	18,600	11,100	9,410
11	6,360	17,300	39,300	11,800	17,300	7,260	18,100	14,900	26,900	16,900	12,500	8,790
12	5,780	16,500	33,500	11,100	13,700	7,560	18,100	13,700	21,700	15,700	15,300	8,480
13	11,500	16,900	31,400	9,720	10,800	8,790	21,700	12,200	17,700	16,500	12,200	7,560
14	25,200	14,900	38,200	9,410	10,700	12,200	22,600	10,800	15,700	28,800	10,400	7,860
15	25,000	13,700	48,000	9,410	26,800	19,800	25,900	10,400	15,700	42,000	9,100	7,260
16	17,700	12,900	41,000	9,410	37,000	18,800	28,900	9,410	13,700	32,400	7,860	7,260
17	14,100	13,300	36,700	9,100	26,900	13,700	24,000	9,100	11,400	23,600	10,200	6,650
18	17,600	41,300	31,900	8,790	19,900	12,200	20,400	8,790	10,000	18,600	16,500	6,360
19	57,900	71,000	25,400	8,170	16,100	11,100	17,700	10,400	10,000	15,300	14,100	6,360
20	102,000	47,600	22,200	10,400	13,300	10,800	15,700	14,500	12,500	13,700	11,400	6,950
21	75,400	34,400	19,900	7,860	11,800	10,000	14,100	19,900	15,700	12,200	9,720	7,260
22	53,600	28,400	18,100	6,070	9,720	9,720	14,900	19,900	15,700	11,100	10,400	6,950
23	39,200	24,500	16,900	6,070	17,800	10,000	22,200	17,300	17,700	16,500	11,100	6,650
24	29,900	21,700	15,300	6,360	28,400	10,400	37,500	27,400	18,100	14,100	10,000	6,070
25	24,500	20,800	12,500	13,700	27,900	12,300	43,900	21,700	16,500	14,100	10,000	5,490
26	20,400	21,700	10,800	15,600	22,900	22,600	34,500	16,900	23,400	11,800	12,200	5,490
27	17,700	19,400	10,000	14,500	16,500	25,900	28,400	14,900	29,900	11,100	24,200	5,490
28	15,300	21,700	10,400	11,100	14,500	28,900	30,900	12,900	27,900	14,500	31,900	5,490
29	13,700	26,400	11,400	7,860	13,300	23,100	38,400	12,500	25,500	19,000	23,600	5,210
30	12,200	27,900	12,500	7,560	-------	21,200	42,700	11,400	62,500	15,700	19,000	5,210
31	10,800	-------	15,300	7,860	-------	28,400	-------	10,800	-------	12,500	15,300	-------

NOTE—This table indicates river discharge; does not include diversion by Pennsylvania Canal, which was closed Nov. 20 to Mar. 25.

Monthly discharge of Delaware River at Riegelsville, for the year ending Sept. 30, 1928

(Drainage area 6,190 sq. miles)

Month	Discharge in second-feet					Run-off in inches
	Observed			Corrected for diversion		
	Maximum	Minimum	Mean	Mean	Per square mile	
October	102,000	2,840	21,700	22,000	3.55	4.09
November	71,000	9,410	26,300	26,500	4.28	4.78
December	78,200	10,000	27,700	27,700	4.47	5.15
January	21,200	6,070	10,900	10,900	1.76	2.03
February	37,000	7,560	16,100	16,100	2.60	2.80
March	28,900	6,950	13,500	13,500	2.18	2.51
April	43,900	14,100	23,700	24,000	3.88	4.33
May	43,300	8,790	18,700	18,900	3.05	3.52
June	62,500	8,170	20,500	20,800	3.36	3.75
July	78,000	11,100	23,800	24,100	3.89	4.48
August	31,900	7,860	13,200	13,400	2.16	2.49
September	20,400	5,210	9,090	9,320	1.51	1.68
The Year	102,000	2,840	18,800	19,000	3.07	41.61

NOTE—Corrected discharge is observed discharge plus estimated 230 second-feet diverted down the Pennsylvania Canal. The Canal was closed Nov. 20 to Mar. 25.

DELAWARE BASIN—STATION NO. 12

DELAWARE RIVER AT TRENTON, N. J.

Location.—On the Calhoun Street Bridge, Trenton, Mercer County, 1 mile above Pennsylvania Railroad bridge, and half a mile above mouth of Assunpink Creek.

Drainage Areas.—6,800 square miles.

Records Available.—February 24, 1913, to September 30, 1928.

Equipment.—Chain gage on downstream side of bridge about 100 feet from left abutment. Discharge measurements made from upstream side of bridge.

Channel and Control.—Control, rocky and permanent at the rapids a few hundred feet below bridge.

Extremes of Discharge.—Maximum stage recorded during year, 10.91 feet at 2.10 p. m. October 20 (discharge, 116,000 second-feet); minimum stage recorded, 0.42 foot at 8 a. m. October 3 (discharge, 2,860 second-feet). Not including flow in canals.

1913-1928: Maximum stage, 13.3 feet during the night of March 28-29, 1913 (discharge, about 160,000 second-feet); minimum stage recorded, 0.40 foot several times in October and November 1914 (discharge 1,240 second-feet). Not including flow in canals.

Diversions and Regulation.—The Delaware Division of the Pennsylvania canal diverts from 20 to 50 second-feet by the gaging station from about March 31 to December 15, each year. The Delaware and Raritan canal feeder diverts about 130 second-feet from the first of March to the last of December each year. The Trenton Power canal diverts about 250 second-feet, daily.

Accuracy.—Stage-discharge relation permanent, except when affected by ice. Rating curve well defined between 1,200 and 125,000 second-feet. Gage read to hundredths once a day. Daily discharge ascertained by applying to rating table daily gage heights corrected for ice effect when necessary. Records fairly good.

Cooperation.—Record furnished by the United States Geological Survey Office, Trenton, New Jersey.

Discharge measurements of Delaware River at Trenton, N. J., during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
28	Apr. 13	R. E. Marsh	3.52	21,200

Measurements of discharge in canals which divert water around gaging station on Delaware River at Trenton, N. J., during the year ending Sept. 30, 1928

Date	Delaware and Raritan Feeder Trenton	Power Canal Trenton	Pennsylvania Canal Morrisville, Pa.
	Sec.-ft.	Sec.-ft.	Sec.-ft.
December 1	51	192	15.9
April 5	134	450	46
May 7	125	308	22
June 28	127	280	19.8
Aug. 7	127	200	21

Daily discharge, in second-feet, of Delaware River at Trenton, N. J., for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,180	10,400	27,400	18,900	9,000	11,600	26,500	44,500	11,600	40,900	11,600	14,400
2	3,020	10,400	22,900	21,300	9,000	13,000	21,300	45,700	11,000	59,700	11,000	13,700
3	3,020	13,000	27,400	20,500	9,500	9,150	19,700	36,500	10,400	39,800	9,150	13,700
4	4,600	34,400	29,400	16,500	10,000	11,000	16,500	32,400	8,600	29,400	9,750	16,500
5	12,300	59,700	31,400	12,000	13,000	9,150	15,800	26,500	9,150	23,800	10,400	22,100
6	18,100	49,300	28,400	12,000	14,000	8,100	15,100	24,700	22,900	34,400	10,400	17,300
7	12,300	35,400	23,800	13,000	12,000	8,100	14,400	22,100	37,600	46,900	13,700	15,800
8	11,000	28,400	33,400	14,000	16,000	7,600	16,500	24,700	40,900	33,400	14,400	15,100
9	12,300	23,800	76,200	15,000	20,000	7,100	21,300	20,500	30,400	24,700	13,700	13,700
10	7,600	20,500	67,800	15,000	21,300	11,000	22,900	18,100	26,500	19,700	9,750	11,000
11	7,100	18,900	42,100	14,000	20,500	7,100	19,700	17,300	26,500	18,100	11,600	9,750
12	7,100	17,300	34,400	12,000	16,500	7,600	22,100	14,400	24,700	16,500	13,000	9,150
13	15,100	18,100	32,400	10,000	12,300	7,100	20,500	13,000	19,700	18,900	11,000	8,600
14	29,400	16,500	35,400	9,750	10,400	11,600	22,900	12,300	16,500	19,700	11,000	8,100
15	29,400	15,100	46,900	10,400	22,100	15,100	24,700	11,000	15,800	23,800	10,400	7,600
16	18,900	14,400	45,700	10,400	30,400	22,100	28,400	9,750	15,100	37,600	9,150	7,600
17	12,300	14,400	37,600	8,600	30,400	15,100	27,400	9,750	15,100	26,500	5,800	7,100
18	31,400	37,600	33,400	9,750	21,300	13,700	21,300	10,400	11,000	21,300	20,500	6,650
19	57,100	74,800	27,400	8,600	18,100	13,700	19,700	9,750	9,750	16,500	15,800	7,100
20	106,000	54,500	22,900	10,400	15,100	12,300	16,500	10,400	11,600	15,800	14,400	7,600
21	89,300	37,600	21,300	9,750	13,000	11,600	16,500	18,900	15,100	13,700	11,000	7,600
22	61,000	30,400	18,900	8,500	12,300	12,300	20,500	22,100	16,500	13,000	9,750	7,100
23	42,100	26,500	17,300	7,000	18,100	10,400	22,900	18,100	16,500	11,600	12,300	8,600
24	32,400	20,500	16,500	8,000	32,400	10,400	40,900	18,900	19,700	11,000	9,150	7,100
25	26,500	22,100	15,100	10,000	29,400	11,000	44,500	24,700	18,900	13,700	11,000	5,400
26	22,100	21,300	13,700	17,300	28,400	17,300	37,600	18,900	18,100	13,700	11,600	5,000
27	18,900	21,300	11,000	16,500	19,700	24,700	30,400	16,500	30,400	11,000	15,100	5,000
28	16,500	20,500	11,000	15,800	15,800	27,400	33,400	14,400	27,400	18,900	35,400	5,000
29	15,100	26,500	11,600	10,000	14,400	25,600	38,700	13,000	23,800	21,300	25,600	5,000
30	13,700	26,500	13,700	9,000	-------	20,500	43,300	11,600	32,400	18,900	20,500	5,000
31	12,300	-------	14,400	9,000	-------	27,400	-------	11,600	-------	13,700	16,500	-------

NOTE—This table indicates river discharge. Discharge Dec. 28, Jan. 5-13, 22-25, 29-31 and Feb. 1-7, when gage was not read, and Feb. 8 and 9, when stage-discharge relation was affected by ice, determined by graphic study of available data.

Monthly discharge of Delaware River at Trenton, N. J., for the year ending Sept. 30, 1928

(Drainage area 6,800 square miles)

Month	Discharge in second-feet					Run-off in inches
	Observed			Corrected for diversion		
	Maximum	Minimum	Mean	Mean	Per square mile	
October	106,000	3,020	24,200	24,600	3.62	4.17
November	74,800	10,400	27,300	27,700	4.07	4.54
December	76,200	11,000	28,700	29,100	4.28	4.93
January	21,300	7,000	12,400	12,600	1.85	2.13
February	32,400	9,000	17,700	18,000	2.65	2.86
March	27,400	7,100	13,500	13,900	2.04	2.35
April	44,500	14,400	24,700	25,100	3.69	4.12
May	45,700	9,750	19,400	19,800	2.91	3.36
June	40,900	8,600	19,800	20,200	2.97	3.31
July	59,700	11,000	23,500	23,900	3.51	4.05
August	35,400	5,800	13,400	13,800	2.03	2.34
September	22,100	5,000	9,780	10,200	1.50	1.67
The Year	106,000	3,020	19,500	19,900	2.93	39.83

NOTE—Corrected discharge is observed discharge plus following diversions: Trenton Power Canal, 250 second-feet daily; Delaware and Raritan Canal feeder, 130 second-feet Oct. 1 to Dec. 31 and Mar. 1 to Sept. 30; Pennsylvania Canal, 20 second-feet Oct. 1 to Nov. 19 and Mar. 26 to Sept. 30.

DELAWARE BASIN—STATION NO. 13

LITTLE SCHUYLKILL RIVER AT TAMAQUA

Location.—At three-span stone arch highway bridge, Broad Street, Tamaqua, Schuylkill County, about 500 feet upstream from the mouth of Panther Creek.

Drainage Area.—44 square miles.

Records Available.—June 23, 1916, to September 30, 1928.

Gages.—Standard chain attached to upstream side of bridge; read to hundredth twice daily by W. P. Griffiths. Elevation of gage zero 788.84 feet, United States Geological Survey datum. Automatic water stage recorder and inclined staff gage to 11 feet with vertical section above installed June 21, 1927, on left side of the stream near Panther Valley Water Company Pumping Station, 3,600 feet upstream from the chain gage; inspected by employees of the Panther Valley Water Company. Elevation of zeros of both gages 28.62 feet above that of chain gage.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—At highway bridge both sides of the channel are outlined by retaining walls extending upstream and downstream from the bridge. Banks subject to overflow only during extreme floods. Bed is composed of gravel and rocks. Low water control is a gravel bar extending diagonally across the channel at downstream side of bridge. Stage-discharge relation not permanent, owing to changes in the gravel bar and lodging of debris on the control.

At the automatic gage both banks are high and not subject to overflow. Bed is composed of gravel and rocks. The control is about 50 feet downstream from the gage, where the bed is composed of large stones; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 5.11 feet recorded at 8 p. m. February 14 (discharge, about 2,450 second-feet); minimum stage 1.09 feet at 5 p. m. September 28 (discharge 11 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Diversions.—The Panther Valley Water Company pumps water from the river about one-half mile upstream from the gaging station

for mine service, which is returned to the stream through Panther Creek.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below and fairly well defined above 200 second-feet. Daily discharge ascertained by appyling daily mean gage height, computed from automatic water stage recorder graph, to rating table. Results good except for discharge above 200 second-feet, when they may be only fair.

Cooperation.—Station was established and is maintained in cooperation with the Panther Valley Water Company, Lansford, Pennsylvania.

Discharge measurements of Little Schuylkill River at Tamaqua during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
116	May 11a	R. P. Mason	1.78	96.9

a Measurement made by wading 15 feet upstream from automatic gage.

Daily Mean Gage Height, in feet, of Little Schuylkill River at Tamaqua, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.34	1.78	1.77	1.77	1.61	1.74	2.30	2.85	1.55	3.01	1.47	1.26
2	1.34	1.74	2.00	1.65	1.58	1.68	2.19	2.61	1.57	2.64	1.44	1.24
3	1.47	1.83	2.14	1.67	1.58	1.62	2.09	2.40	1.51	2.42	1.40	1.48
4	2.20	1.86	2.11	1.66	1.78	1.58	2.03	2.26	1.57	2.27	1.40	1.40
5	1.72	1.84	2.09	1.74	2.25	1.54	1.97	2.21	1.95	2.74	1.36	1.32
6	1.65	1.82	2.05	1.68	1.70	1.52	1.93	2.19	2.47	2.75	1.75	1.31
7	1.61	1.74	2.08	1.67	1.68	1.50	1.91	2.03	2.16	2.47	1.56	1.36
8	1.60	1.68	3.80	1.64	2.18	1.48	2.07	1.95	2.07	2.31	1.41	1.32
9	1.58	1.60	3.08	1.66	2.15	1.44	1.98	1.90	2.19	2.17	1.36	1.31
10	1.62	1.58	2.70	1.62	1.87	1.53	1.92	1.84	2.15	2.09	1.40	1.26
11	1.62	1.59	2.50	1.60	1.82	1.43	1.87	1.80	2.03	2.02	1.36	1.26
12	1.68	1.58	2.38	1.56	1.77	1.57	2.18	1.75	1.98	1.98	1.41	1.37
13	3.00	1.56	2.39	1.56	1.70	2.10	2.06	1.72	1.95	2.02	1.31	1.29
14	2.43	1.55	2.42	1.54	2.51	2.08	2.38	1.69	1.90	2.45	1.29	1.28
15	2.22	1.57	2.24	1.52	2.52	1.85	2.50	1.68	1.87	2.02	1.28	1.25
16	2.09	1.56	2.37	1.50	2.15	1.76	2.36	1.62	1.78	1.92	1.26	1.27
17	2.22	2.04	2.32	1.50	1.99	1.72	2.31	1.57	1.73	1.85	1.44	1.22
18	2.44	2.95	2.28	1.49	1.96	1.71	2.15	1.79	1.70	1.82	1.37	1.22
19	3.18	2.54	2.17	1.58	1.85	1.64	2.06	1.98	1.69	1.82	1.32	1.24
20	3.22	2.32	2.13	1.62	1.77	1.62	1.96	2.25	1.65	1.86	1.27	1.29
21	2.88	2.20	2.07	1.52	1.68	1.63	1.93	2.06	1.69	1.72	1.26	1.26
22	2.62	2.15	1.98	1.59	1.70	1.64	2.20	1.99	1.78	1.71	1.37	1.22
23	2.44	2.03	1.92	1.52	2.48	1.86	2.22	1.93	1.67	1.66	1.29	1.19
24	2.25	2.04	1.82	1.55	2.43	1.96	2.28	1.86	1.75	1.60	1.26	1.18
25	2.16	1.91	1.78	2.44	2.15	2.05	2.21	1.80	2.32	1.57	1.26	1.20
26	2.06	1.88	1.75	1.79	2.02	2.02	2.16	1.77	2.68	1.55	1.34	1.20
27	1.99	1.92	1.75	1.71	1.95	2.01	2.15	1.72	2.46	1.55	1.30	1.18
28	1.94	1.87	1.70	1.75	1.82	1.92	2.52	1.72	2.23	1.54	1.34	1.17
29	1.89	1.86	1.82	1.74	1.78	1.88	2.78	1.67	3.27	1.50	1.30	1.21
30	1.84	1.81	1.74	1.68	-------	2.55	3.02	1.64	3.74	1.46	1.31	1.22
31	1.81	-------	1.84	1.65	-------	2.46	-------	1.59	-------	1.44	1.34	-------

NOTE—Gage heights computed from Automatic Water Stage Recorder Graph. Stage-discharge relation Feb. 4 and 5 affected by ice.

Daily discharge, in second-feet, of Little Schuylkill River at Tamaqua, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	81	80	80	54	74	265	595	46	705	37	20
2	26	74	135	60	50	64	213	430	48	462	35	19
3	37	92	191	62	50	55	169	315	41	326	31	38
4	217	98	177	61	60	50	146	246	48	251	31	31
5	71	94	169	74	120	45	127	222	121	528	28	25
6	60	89	154	64	67	42	115	213	354	528	76	24
7	54	74	165	62	64	40	110	146	199	354	47	28
8	52	64	1,320	58	208	38	162	121	162	270	32	25
9	50	52	780	61	195	35	129	107	213	204	28	24
10	55	50	495	55	100	44	113	94	195	169	31	20
11	55	51	370	52	89	34	100	85	146	143	28	20
12	64	50	305	47	80	48	208	76	129	129	32	29
13	705	47	310	47	67	173	158	71	121	143	24	22
14	332	46	326	45	370	165	305	66	107	342	22	22
15	227	48	236	42	370	96	370	64	100	143	22	20
16	169	47	300	40	195	78	295	55	81	113	20	21
17	227	150	275	40	132	71	270	48	72	96	35	17
18	337	668	255	39	124	69	195	83	67	89	29	17
19	855	400	204	50	96	58	158	129	66	89	25	19
20	855	275	186	55	80	55	124	241	60	98	21	22
21	630	217	162	42	64	56	115	158	66	71	20	20
22	430	195	129	51	67	58	217	132	81	69	29	17
23	337	146	113	42	359	98	227	115	62	61	22	16
24	241	150	89	46	332	124	255	98	76	52	20	15
25	199	110	81	337	195	154	222	85	275	48	20	16
26	158	103	76	83	143	143	199	80	495	46	26	16
27	132	113	76	69	121	139	195	71	348	46	23	15
28	118	100	67	76	89	113	370	71	231	45	26	14
29	105	98	89	74	81	103	560	62	892	40	23	17
30	94	87	74	64	-------	400	705	58	1,240	36	24	17
31	87	-------	94	60	-------	348	-------	51	-------	35	26	-------

NOTE—Discharge does not include the quantity of water diveretd by the Panther Valley Water Company. Discharge Feb. 4 and 5 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for chain gage station at Tamaqua and Lackawanna River at Moosic.

Monthly discharge of Little Schuylkill River at Tamaqua, for the year ending Sept. 30, 1928

(Drainage area 44 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	855	26	226	5.14	5.93
November	668	46	129	2.93	3.27
December	1,320	67	241	5.48	6.32
January	337	39	65.7	1.49	1.72
February	370	50	139	3.16	3.41
March	400	34	99.0	2.25	2.59
April	705	100	227	5.16	5.76
May	595	48	142	3.23	3.72
June	1,240	41	205	4.66	5.20
July	705	35	185	4.20	4.84
August	76	20	28.8	.655	.76
September	38	14	20.9	.475	.53
The Year	1,320	14	142	3.23	44.05

NOTE—Discharge does not include the quantity of water diverted by the Panther Valley Water Company. Run-off does include the quantity of water diverted.

DELAWARE BASIN—STATION NO. 14

SCHUYLKILL RIVER AT READING

Location.—At concrete viaduct, Penn Street, Reading, Berks County.

Drainage Area.—900 square miles.

Records Available.—May 6, 1914, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by H. J. Kline. Elevation of gage zero 188.50 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left is low and stream begins to overflow the canal towpath at a stage of 6.8 feet. Bed is composed of gravel. Low water control is at a slight riffle about 700 feet downstream from the gage; may shift occasionally. Control for high stages is probably at the Pennsylvania Railroad bridge about 900 feet downstream from the gage; considered permanent.

Extremes of Discharge.—Maximum stage during the year, 9.80 feet observed at 7.50 a. m. June 30 (discharge about 17,600 second-feet); minimum,—0.70 foot at 7.30 a. m. October 2 (discharge, 245 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Diversions.—The Schuylkill Navigation Company Canal, which follows along the left bank, was closed for navigation purposes after Nov. 19, 1927; however, some water is frequently diverted through the canal for flushing purposes .

Accuracy.—Stage-discharge relation permanent throughout the year. Rating curve well defined below 8,000 second-feet, and fairly well defined above. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for low stages when they are fair, owing to uncertain quantity of water diverted by canal.

Discharge measurements of Schuylkill River at Reading during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
74	Nov. 16	Geo. Weber	0.30	743
75	19	do	4.14	4,960

Daily Mean Gage Height, in feet, of Schuylkill River at Reading, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	—0.56	0.65	1.06	1.79	1.02	1.82	2.86	4.88	0.56	5.38	0.58	0.80
2	— .64	.57	1.21	.66	.90	1.54	2.51	3.80	.49	3.95	.58	.51
3	— .42	1.33	2.47	1.02	.74	1.42	2.11	3.17	.44	3.20	.58	.96
4	1.75	1.25	2.61	.87	.78	1.19	1.88	2.74	.54	2.68	.49	1.35
5	1.05	1.08	2.80	.85	1.85	1.21	1.63	2.42	.95	3.35	.78	.78
6	.57	.96	2.55	1.10	1.68	.96	1.42	2.30	2.74	6.05	1.60	.75
7	.34	.77	2.30	1.18	1.33	.94	1.48	1.97	2.39	3.93	1.85	.95
8	— .17	.66	6.36	1.19	3.51	.87	1.45	1.70	1.90	3.22	1.16	.65
9	.13	.61	6.12	1.27	4.03	.89	1.34	1.53	1.75	2.81	.89	.52
10	.00	.56	4.29	1.03	2.71	.78	1.16	1.47	2.66	2.40	.67	.50
11	— .04	.47	3.46	.87	2.09	.95	1.08	1.31	2.10	2.20	.71	.39
12	— .03	.44	3.27	.89	1.80	.88	1.91	1.24	1.77	2.08	.96	.32
13	2.68	.38	2.94	.78	1.46	1.50	1.70	1.06	1.58	3.20	.60	.40
14	2.31	.33	3.48	.77	2.00	2.38	1.79	1.02	1.59	4.76	.46	.33
15	1.50	.29	3.04	.70	5.96	1.90	3.01	.96	1.50	3.80	.32	.17
16	1.18	.29	3.14	.64	3.34	1.57	2.69	.89	1.05	3.06	.30	.12
17	1.05	.60	3.44	.54	2.70	1.45	2.22	.91	.86	2.59	1.26	.17
18	1.72	6.39	3.12	.64	2.45	1.69	2.08	.71	.87	2.07	1.62	.06
19	4.20	4.05	2.68	.69	1.91	1.53	1.87	1.57	1.09	1.85	.85	.10
20	6.19	2.95	2.30	1.61	1.83	1.40	1.58	2.22	.86	1.77	.60	.54
21	4.57	2.42	2.18	.44	1.52	1.43	1.45	1.97	.68	1.45	.48	.39
22	3.35	2.23	1.96	.82	1.32	1.68	1.90	1.85	1.21	1.43	.80	.15
23	2.69	1.86	1.73	1.02	4.14	1.87	2.48	1.61	1.22	1.52	.75	.04
24	2.26	1.63	1.51	1.13	5.20	2.26	2.81	1.36	1.03	1.21	.49	— .02
24	1.85	1.53	1.14	3.04	3.50	2.22	2.64	1.17	2.29	1.11	.71	— .04
26	1.50	1.28	1.22	1.75	2.75	2.24	2.50	1.15	4.90	.99	1.21	— .04
27	1.31	1.23	1.11	1.51	2.36	1.98	2.40	1.10	4.28	1.02	1.22	— .07
28	1.12	1.33	.94	1.41	2.11	1.76	5.70	.93	3.28	1.24	.93	— .09
29	.99	1.30	1.29	.88	1.88	1.60	6.45	.80	4.35	.81	.78	— .16
30	.87	1.12	1.60	1.07	-------	2.50	6.10	.75	8.35	.73	1.25	— .03
31	.79	-------	1.41	1.14	-------	3.21	-------	.69	-------	.65	1.08	-------

Daily discharge, in second-feet, of Schuylkill River at Reading, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	301	990	1,420	2,120	1,330	2,120	3,390	6,210	990	7,100	990	1,150
2	268	990	1,510	1,070	1,240	1,800	2,910	4,570	910	4,840	990	910
3	372	1,600	2,910	1,330	1,070	1,700	2,450	3,770	872	3,770	990	1,330
4	2,120	1,510	3,030	1,240	1,150	1,510	2,230	3,150	910	3,150	910	1,700
5	1,330	1,420	3,270	1,150	2,120	1,510	1,900	2,800	1,330	4,030	1,150	1,150
6	990	1,330	3,030	1,420	2,010	1,330	1,700	2,680	3,150	8,250	1,900	1,150
7	799	1,150	2,680	1,510	1,600	1,240	1,800	2,340	2,800	4,700	2,120	1,330
8	496	1,070	9,080	1,510	4,160	1,240	1,700	2,010	2,230	3,770	1,510	990
9	667	990	8,450	1,600	4,840	1,240	1,600	1,800	2,120	3,270	1,240	910
10	578	990	5,270	1,330	3,150	1,150	1,510	1,800	3,150	2,800	1,070	910
11	550	872	4,160	1,240	2,450	1,330	1,420	1,600	2,450	2,560	1,070	834
12	550	872	3,900	1,240	2,120	1,240	2,230	1,510	2,120	2,450	1,330	764
13	3,150	834	3,390	1,150	1,800	1,800	2,010	1,420	1,900	3,770	990	834
14	2,680	799	4,160	1,150	2,340	2,800	2,120	1,330	1,900	6,050	872	799
15	1,800	764	3,510	1,070	8,250	2,230	3,510	1,330	1,800	4,570	764	667
16	1,420	764	3,640	990	3,900	1,900	3,150	1,240	1,330	3,640	764	636
17	1,330	990	4,030	910	3,150	1,700	2,560	1,240	1,240	3,030	1,600	667
18	2,010	9,080	3,640	990	2,800	2,010	2,450	1,070	1,240	2,450	1,900	607
19	5,130	4,840	3,150	1,070	2,230	1,800	2,230	1,900	1,420	2,120	1,150	636
20	8,660	3,510	2,680	1,900	2,120	1,700	1,900	2,560	1,240	2,120	990	910
21	5,720	2,800	2,560	872	1,800	1,700	1,700	2,340	1,070	1,700	910	834
22	4,030	2,560	2,340	1,150	1,600	2,010	2,230	2,120	1,510	1,700	1,150	667
23	3,150	2,230	2,010	1,330	4,990	2,230	2,910	1,900	1,510	1,800	1,150	607
24	2,680	1,900	1,800	1,420	6,740	2,680	3,270	1,700	1,330	1,510	910	578
25	2,120	1,800	1,420	3,510	4,160	2,560	3,030	1,510	2,680	1,420	1,070	550
26	1,800	1,600	1,510	2,120	3,270	2,560	2,910	1,510	6,210	1,330	1,510	550
27	1,600	1,510	1,420	1,800	2,800	2,340	2,800	1,420	5,270	1,330	1,510	550
28	1,420	1,600	1,240	1,700	2,450	2,120	7,660	1,240	3,900	1,510	1,240	522
29	1,330	1,600	1,600	1,240	2,230	1,900	9,080	1,150	5,410	1,150	1,150	496
30	1,240	1,420	1,900	1,420	-------	2,910	8,450	1,150	13,900	1,070	1,510	550
31	1,150	-------	1,700	1,420	-------	3,770	-------	1,070	-------	990	1,420	-------

NOTE—Discharge does not include the quantity of water diverted past the gage through Schuylkill Navigation Company Canal. Canal was closed for navigation purposes after Nov. 19, 1927.

Monthly discharge of Schuylkill River at Reading, for the year ending Sept. 30, 1928

(Drainage area 900 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	8,660	268	1,980	2.20	2.54
November	9,080	764	1,810	2.01	2.24
December	9,080	1,240	3,110	3.46	3.99
January	3,510	872	1,420	1.58	1.82
February	8,250	1,070	2,890	3.21	3.46
March	3,770	1,150	1,940	2.16	2.49
April	9,080	1,420	2,960	3.29	3.67
May	6,210	1,070	2,050	2.28	2.63
June	13,900	872	2,600	2.89	3.22
July	8,250	990	3,030	3.37	3.88
August	2,120	764	1,220	1.36	1.57
September	1,700	496	826	.918	1.02
The Year	13,900	268	2,150	2.39	32.53

NOTE—Discharge and run-off does not include the water diverted past the gage through Schuylkill Navigation Company Canal. Canal was closed for navigation purposes after Nov. 19, 1927.

DELAWARE BASIN—STATION NO. 15

SCHUYLKILL RIVER AT POTTSTOWN

Location.—At two-span steel highway bridge, Hanover Street, Pottstown, Montgomery County.

Drainage Area.—1,170 square miles.

Records Available.—August 1, 1927, to September 30, 1928.

Gage.—Standard chain attached to bridge between the roadway and the downstream sidewalk; read by Albert Reed. Elevation of gage zero 117.81 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of culm and gravel. The control is at a series of riffles, where the bed is composed of coarse gravel, at the heads of three islands, about 4,000 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 11.3 feet at 10 a. m. February 15 (discharge about 26,400 second-feet); minimum, 1.14 feet from 8 a. m. to noon October 3 (discharge, 406 second-feet).

Ice.—Stage-discharge relation affected by ice during severe winters.

Diversions.—During navigation season water is diverted past the gage through the Schuylkill Navigation Company Canal, which follows along the stream about 1,200 feet from the right bank. From October 1 to November 28, 1927, it was estimated by the Schuylkill Navigation Company that the discharge was about 35 second-feet. The Pennsylvania Department of Highways filled in the canal at Birdsboro in February 1928 and at Laurel Hill, about 3 miles upstream from Pottstown, in May and June 1928.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined. Gage read thrice daily; durin high stages more frequently. Daily discharge ascertained by applying daily mean gage height, computed from a continuous daily hydrograph obtained by plotting gage readings, to rating table. Results good.

Cooperation.—Station was established and is maintained in cooperation with Pennsylvania Department of Health, Sanitary Water Board.

Discharge measurements of Schuylkill River at Pottstown during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
4	Nov. 16	Geo. Weber	1.98	1,090
5	18	C. H. Young	7.79	11,600
6	Dec. 13	Geo. Weber	4.39	4,510
7	Jan. 23	do	2.57	1,670
8	June 25	do	3.03	2,280
9	Aug. 2	R. H. Hosmer	2.07	1,110
10	Sept. 20	J. M. Snavely	2.16	1,240

Daily Mean Gage Height, in feet, of Schuylkill River at Pottstown, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	2.27	2.58	3.42	4.63	3.47	4.34	6.17	2.28	6.45	2.10	2.17
2	1.18	2.21	2.86	2.62	4.11	3.27	3.88	5.38	2.24	4.98	2.07	2.16
3	1.36	2.81	4.11	2.50	4.78	3.07	3.57	4.66	2.16	4.17	2.06	2.35
4	3.15	2.89	4.02	2.60	3.74	2.98	3.36	4.26	2.14	3.72	2.03	2.73
5	2.88	2.74	4.01	2.64	3.36	2.85	3.21	3.98	2.50	3.93	2.02	2.25
6	2.12	2.55	4.07	2.64	3.31	2.72	2.90	3.80	3.87	6.50	3.00	2.23
7	2.09	2.41	3.85	2.67	2.96	2.61	2.78	3.60	3.99	4.90	3.22	2.48
8	1.75	2.29	7.20	2.56	4.93	2.53	2.92	3.32	3.31	4.02	2.75	2.25
9	1.84	2.22	7.59	2.77	6.36	2.52	2.91	3.21	3.07	3.62	2.31	2.10
10	1.75	2.27	5.60	-------	4.89	2.70	2.66	3.04	3.13	3.26	2.16	2.04
11	1.65	2.14	4.87	-------	3.96	2.68	2.65	2.98	3.37	3.14	2.17	1.95
12	1.69	2.09	4.68	2.44	3.56	2.63	3.38	2.90	3.15	3.09	2.33	1.89
13	4.10	2.04	4.40	2.40	3.26	3.26	3.46	2.74	2.99	4.48	2.11	1.89
14	3.80	2.02	4.92	2.39	3.62	4.06	3.26	2.63	2.87	7.03	1.96	1.88
15	3.05	1.96	4.57	2.34	8.38	3.59	4.29	2.54	3.19	5.10	1.87	1.79
16	2.72	1.94	4.61	2.29	4.91	3.15	4.02	2.51	2.67	3.94	1.89	1.75
17	2.51	2.25	5.07	2.21	4.29	3.02	3.69	2.45	2.45	3.55	2.73	1.76
18	3.15	7.10	4.53	2.21	4.14	3.14	3.51	2.41	2.33	3.18	3.17	1.71
19	5.88	5.49	4.09	2.25	3.87	3.24	3.37	2.93	2.54	2.98	2.77	1.82
20	7.50	4.33	3.77	3.15	3.50	3.07	3.15	3.93	2.49	2.88	2.16	2.24
21	6.00	3.81	3.63	2.47	3.28	3.02	2.96	3.66	2.33	2.79	2.01	2.00
22	4.80	3.62	3.43	2.03	2.96	3.18	3.41	3.87	2.64	2.73	2.16	1.79
23	4.14	3.28	3.28	2.43	5.44	3.26	4.25	3.90	2.87	2.71	2.25	1.68
24	3.71	3.03	3.02	2.53	7.56	3.50	4.58	3.10	2.82	2.63	2.06	1.61
25	3.33	3.03	2.87	3.94	5.08	3.58	4.17	2.81	2.86	2.49	2.53	1.61
26	3.08	2.74	2.78	3.91	4.24	3.57	3.94	2.72	4.24	2.36	2.62	1.61
27	2.84	2.71	2.66	3.01	4.00	3.41	4.10	2.64	5.39	2.86	2.63	1.64
28	2.68	2.84	2.53	2.90	3.73	3.26	7.57	2.57	4.31	3.67	2.35	1.58
29	2.57	2.85	2.44	2.48	3.52	3.11	7.84	2.56	4.35	2.40	2.23	1.55
30	2.44	2.68	3.14	2.88	-------	3.84	7.08	2.46	9.12	2.20	2.27	1.81
31	2.31	-------	3.00	3.26	-------	4.68	-------	2.38	-------	2.13	2.41	-------

NOTE—Gage height Oct. 1, Jan. 10 and 11 not observed. Stage-discharge relation Jan. 30 to Feb. 4 affected by ice.

Daily discharge, in second-feet, of Schuylkill River at Pottstown, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	440	1,360	1,770	2,850	1,800	3,000	4,400	8,490	1,420	8,990	1,200	1,260
2	435	1,310	2,150	1,700	1,500	2,700	3,660	6,610	1,360	5,770	1,150	1,260
3	535	2,020	4,020	1,650	1,300	2,410	3,160	5,160	1,260	4,210	1,150	1,480
4	2,550	2,150	3,840	1,770	1,900	2,280	2,850	4,400	1,260	3,320	1,150	1,890
5	2,150	1,890	3,840	1,770	2,850	2,020	2,550	3,840	1,650	3,660	1,100	1,360
6	1,200	1,770	4,020	1,770	2,700	1,890	2,150	3,490	3,660	9,240	2,280	1,360
7	1,200	1,530	3,490	1,890	2,280	1,770	2,020	3,160	3,840	5,560	2,550	1,650
8	865	1,420	11,100	1,770	5,560	1,650	2,150	2,700	2,700	3,840	2,020	1,360
9	955	1,310	12,300	2,020	8,990	1,650	2,150	2,550	2,410	3,160	1,420	1,200
10	865	1,360	7,060	1,800	5,560	1,890	1,890	2,280	2,410	2,700	1,260	1,150
11	778	1,260	5,560	1,500	3,840	1,890	1,770	2,280	2,850	2,410	1,260	1,050
12	820	1,200	5,160	1,590	3,160	1,770	2,850	2,150	2,550	2,410	1,480	1,000
13	4,020	1,150	4,590	1,530	2,700	2,700	3,000	1,890	2,280	4,780	1,200	1,000
14	3,490	1,100	5,560	1,530	3,160	4,020	2,700	1,770	2,150	10,600	1,050	1,000
15	2,280	1,050	4,970	1,480	14,800	3,160	4,400	1,650	2,550	5,980	955	910
16	1,890	1,050	4,970	1,420	5,560	2,550	3,840	1,650	1,890	3,660	1,000	865
17	1,650	1,360	5,980	1,310	4,400	2,280	3,320	1,590	1,590	3,160	1,890	865
18	2,550	10,800	4,780	1,310	4,020	2,410	3,000	1,530	1,480	2,550	2,550	820
19	7,760	6,830	4,020	1,360	3,660	2,550	2,850	2,150	1,650	2,280	2,020	910
20	12,000	4,400	3,490	2,550	3,000	2,410	2,550	3,660	1,650	2,150	1,260	1,360
21	8,000	3,490	3,160	1,590	2,700	2,280	2,280	3,320	1,480	2,020	1,100	1,100
22	5,360	3,160	2,850	1,150	2,280	2,550	2,850	3,660	1,770	1,890	1,260	910
23	4,020	2,700	2,700	1,590	6,610	2,700	4,210	3,660	2,150	1,890	1,360	820
24	3,320	2,280	2,280	1,650	12,300	3,000	4,970	2,410	2,020	1,770	1,150	735
25	2,700	2,280	2,150	3,660	5,980	3,160	4,210	2,020	2,150	1,650	1,650	735
26	2,410	1,890	2,020	3,660	4,210	3,160	3,660	1,890	4,210	1,480	1,770	735
27	2,020	1,890	1,890	2,280	3,840	2,850	4,020	1,770	6,610	2,150	1,770	778
28	1,890	2,020	1,650	2,150	3,320	2,700	12,300	1,770	4,400	3,320	1,480	735
29	1,770	2,020	1,590	1,650	3,000	2,410	12,900	1,770	4,590	1,530	1,360	692
30	1,590	1,890	2,410	1,700	-------	3,490	10,600	1,590	17,200	1,310	1,360	910
31	1,420	-------	2,280	1,800	-------	5,160	-------	1,530	-------	1,260	1,530	-------

NOTE—Discharge does not include the water diverted past the gage through the Schuylkill Navigation Company Canal. Canal was closed for navigation purposes after Nov. 28, 1927. Discharge estimated Oct. 1, Jan. 10 and 11, because of no gage height record, from weather records and study of gage height graph, and Jan. 30 to Feb. 4, because of ice, from weather records, study of gage height graph and comparison with similar studies for Schuylkill River at Reading, Perkiomen Creek at Graters Ford and Brandywine Creek at Chadds Ford.

Monthly discharge of Schuylkill River at Pottstown, for the year ending Sept. 30, 1928

(Drainage area 1,170 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	12,000	420	2,680	2.29	2.64
November	10,800	1,050	2,330	1.99	2.22
December	12,300	1,590	4,120	3.52	4.06
January	3,660	1,150	1,850	1.58	1.82
February	14,800	1,300	4,380	3.74	4.03
March	5,160	1,650	2,600	2.22	2.56
April	12,900	1,770	3,980	3.40	3.79
May	8,490	1,530	2,850	2.44	2.81
June	17,200	1,260	2,970	2.54	2.83
July	10,600	1,260	3,570	3.05	3.52
August	2,550	955	1,480	1.26	1.45
September	1,890	692	1,060	.906	1.01
The Year	17,200	420	2,820	2.41	32.74

NOTE—Discharge and run-off do not include the quantity of water diverted past the gage through the Schuylkill Navigation Company Canal. Canal was closed for navigation purposes after Nov. 28, 1927.

DELAWARE BASIN—STATION NO. 16

PERKIOMEN CREEK AT GRATERS FORD

Location.—At two-span steel highway bridge, Graters Ford, Montgomery County.

Drainage Area.—280 square miles.

Records Available.—June 11, 1914, to September 30, 1928.

Gages.—Standard chain attached to upstream side of bridge, inclined staff installed in August 1921, on left bank 1,650 feet upstream from chain gage, and automatic water stage recorder installed September 14, 1927, at the staff gage. Chain and staff gages read and automatic gage inspected by C. K. Kulp. Elevation of chain gage zero 109.08 feet, United States Geological Survey datum. Elevation of staff gage zero is 3.29 feet above that of the chain gage, instead of 3.23 feet, as published previous to 1926.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—The right bank is high and does not overflow; the left is of medium height but not subject to overflow. There is a flood plane, about 1,200 feet wide, along the left side of the stream, that becomes inundated at a gage height of about 11 feet. Bed is composed of gravel and rock. Low stages at the chain gage are affected by backwater from the dam at Ironbridge. Control for low stages at the staff gage is at a riffle about 200 feet downstream from the gage, where the bed is composed of gravel and large stones; probably permanent. Control for medium and high stages, for both gages, is the dam at Ironbridge.

Extremes of Discharge.—Maximum stage recorded during the year, 13.36 feet at 8.30 a. m. July 14 (discharge, about 18,400 second-feet); minimum stage 1.22 feet at 3.45 p. m. October 2 (discharge, 56 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,000 second-feet. Daily discharge ascertained by applying daily mean gage height, computed from automatic water stage recorder graph, to rating table. Results

good except for medium and high stages, when they may be only fair.

Discharge measurements of Perkiomen Creek at Graters Ford during the year ending Sept. 30, 1928

No.	Date	Made by	Staff Gage Height	Discharge
			Feet	Sec. ft.
62	June 25	Geo. Weber	2.24	476
63	July 12	O. Lauterhahn	2.08	348
64	Aug. 1a	Geo. Weber	1.78	208
65	16b	Marsh and Barnett	1.50	100
66	Sept. 21c	J. M. Snavely	1.85	216

a Measurement made by wading 200 feet downstream from gage.
b Measurement made by wading 15 feet upstream from gage.
c Measurement made by wading 1,200 feet upstream from gage.

Daily Mean Gage Height, in feet, of Perkiomen Creek at Graters Ford, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.30	1.60	2.06	2.70	2.65	2.14	2.25	2.52	1.75	1.82	1.82	1.76
2	1.25	1.57	3.26	1.98	2.48	2.00	2.11	2.29	1.67	1.67	1.84	1.66
3	1.30	5.28	3.72	2.22	2.32	1.91	2.00	2.15	1.62	1.58	1.67	1.98
4	2.46	4.30	2.57	1.79	2.27	1.83	1.93	2.06	1.62	1.52	-------	2.14
5	1.87	2.88	3.93	1.97	3.05	1.85	1.87	1.99	1.90	1.59	-------	1.78
6	1.58	2.46	3.69	1.91	3.80	1.75	1.82	1.98	4.52	4.38	-------	1.94
7	1.50	2.18	3.44	1.86	2.85	1.74	1.78	1.95	2.61	2.30	-------	1.61
8	1.47	2.02	7.55	1.80	6.84	1.73	1.78	1.83	2.13	1.94	-------	2.14
9	1.62	2.00	3.22	1.90	5.74	1.76	1.75	1.85	1.99	1.79	-------	1.93
10	1.91	1.97	-------	1.97	3.45	1.78	1.67	1.91	1.99	1.71	-------	1.79
11	1.72	1.90	-------	1.82	2.65	1.82	1.68	1.80	1.80	1.72	1.88	1.72
12	1.66	1.85	-------	1.81	2.44	2.33	2.45	1.88	1.72	2.36	1.72	1.66
13	6.02	1.78	2.92	1.81	2.23	2.91	2.31	1.75	1.67	4.22	-------	1.63
14	2.70	1.74	3.82	1.87	2.93	2.83	2.23	1.69	2.28	8.92	-------	1.60
15	2.16	1.71	2.69	1.81	4.85	2.47	2.58	1.65	2.85	3.72	-------	1.56
16	1.94	1.70	3.20	1.84	2.89	2.23	2.07	1.63	1.97	2.59	1.46	1.51
17	1.87	3.19	3.31	1.83	2.67	2.16	1.94	1.60	1.73	2.23	-------	1.78
18	3.32	5.86	2.43	1.83	2.72	2.87	1.91	1.70	1.68	2.02	-------	1.63
19	7.44	2.82	2.25	2.02	2.37	2.83	1.83	3.39	1.90	1.90	2.42	1.66
20	4.56	2.44	2.34	3.25	2.32	2.42	1.72	3.38	1.85	1.85	2.04	2.10
21	3.12	2.22	2.10	2.15	2.15	2.22	1.72	2.87	1.72	1.81	1.87	1.93
22	2.45	2.20	2.05	2.20	2.09	2.14	2.88	2.37	2.00	1.85	2.33	1.71
23	2.20	2.09	2.00	2.03	5.77	2.10	4.80	2.13	2.02	2.17	2.09	1.62
24	2.06	2.00	1.92	1.90	4.00	2.00	5.04	1.97	3.28	2.25	1.88	1.55
25	1.94	1.98	1.86	3.47	2.68	1.99	2.94	1.86	2.37	1.84	1.87	1.52
26	1.85	1.90	1.98	2.30	2.27	1.98	2.45	1.84	2.05	1.69	2.86	1.52
27	1.78	1.85	1.94	2.37	2.25	1.94	2.53	1.95	1.84	2.15	2.81	1.51
28	1.72	2.17	1.86	2.78	2.13	1.82	6.84	2.04	1.70	4.99	2.18	1.49
29	1.68	2.42	1.94	3.47	2.07	1.78	3.90	1.88	1.82	2.48	1.97	1.50
30	1.64	2.18	2.30	3.22	-------	3.43	2.85	1.80	2.15	2.03	1.82	1.65
31	1.61	-------	2.20	2.90	-------	2.88	-------	1.91	-------	1.85	1.88	-------

NOTE—Gage heights computed from Automatic Water Stage Recorder Graph. Recorder not in operation on days of no record. Stage-discharge relation Dec. 26, 27, Jan. 27 to Feb. 4 affected by ice.

Daily discharge, in second-feet, of Perkiomen Creek at Graters Ford, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	155	340	780	400	392	450	615	210	238	224	198
2	62	146	1,370	306	340	315	365	480	180	180	233	159
3	72	4,540	1,980	420	340	274	315	392	162	149	162	298
4	580	2,910	655	226	400	242	284	340	162	131	240	387
5	258	970	2,280	302	1,140	250	258	310	270	152	300	207
6	149	580	1,980	274	2,130	210	238	306	3,230	3,070	1,200	279
7	125	420	1,630	254	920	206	222	292	695	480	440	141
8	117	315	8,450	230	7,080	202	222	242	392	288	280	387
9	162	315	1,310	270	5,210	214	210	250	310	226	220	274
10	274	302	600	302	1,630	222	180	274	310	194	100	211
11	198	270	550	238	738	238	183	230	230	198	251	181
12	176	250	550	234	580	512	580	262	198	512	181	159
13	5,720	222	970	234	450	970	480	210	180	2,750	130	148
14	780	206	2,130	258	1,020	920	450	186	480	10,700	120	137
15	392	194	780	234	3,710	580	695	172	920	1,980	95	124
16	288	190	1,310	246	970	450	340	166	302	695	93	107
17	258	1,310	1,430	242	738	392	288	155	202	446	2,200	207
18	1,430	5,550	580	242	780	920	274	190	183	308	1,800	148
19	8,110	870	450	315	512	920	242	1,560	270	260	545	159
20	3,390	580	512	1,370	480	545	198	1,560	250	238	334	359
21	1,190	420	365	392	392	420	198	920	198	220	246	274
22	580	420	340	420	365	392	970	512	315	238	512	177
23	420	365	315	340	5,380	365	3,710	392	315	387	359	144
24	340	315	279	270	2,430	315	4,030	302	1,430	446	251	120
25	288	306	254	1,630	780	310	1,020	254	512	233	246	111
26	250	270	260	480	450	306	580	246	340	169	920	111
27	222	250	260	400	450	288	655	292	246	387	870	107
28	198	392	254	340	392	238	7,080	340	190	4,030	415	101
29	183	545	288	320	340	222	2,280	262	238	615	294	104
30	169	420	480	340	-------	1,630	920	230	392	334	224	155
31	158	-------	420	440	-------	970	-------	274	-------	238	251	-------

NOTE—Discharge estimated Dec. 10-12, Aug. 4-10, 13-15, 17 and 18, because of no automatic gage record, from weather records, study of gage height graph and chain gage heights observed at highway bridge, and Dec. 26, 27 and Jan. 27 to Feb. 4, because of ice, from weather records, study of gage height graph and comparison with similar records for Schuylkill River at Reading and Norristown and Brandywine Creek at Chadds Ford.

Monthly discharge of Perkiomen Creek at Graters Ford, for the year ending Sept. 30, 1928

(Drainage area 280 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	8,110	62	858	3.06	3.53
November	5,550	146	800	2.86	3.19
December	8,450	254	1,080	3.86	4.45
January	1,630	226	398	1.42	1.64
February	7,080	340	1,400	5.00	5.39
March	1,630	202	465	1.66	1.91
April	7,080	180	931	3.32	3.70
May	1,560	155	394	1.41	1.63
June	3,230	180	444	1.59	1.77
July	10,700	131	984	3.51	4.05
August	2,200	93	443	1.58	1.82
September	387	101	189	.675	.75
The Year	10,700	62	696	2.49	33.83

DELAWARE BASIN—STATION NO. 17

SCHUYLKILL RIVER AT NORRISTOWN

Location.—At seven-span concrete highway bridge, DeKalb Street, between Bridgeport and Norristown, Montgomery County.

Drainage Area.—1,760 square miles.

Records Available.—August 1, 1927, to September 30, 1928.

Gages.—Standard chain attached to upstream side of bridge in first span from Bridgeport. Vertical staff and automatic water stage recorder attached to downstream end of Bridgeport abutment, Schuylkill Navigation Company dam, about 800 feet upstream from chain gage. Vertical staff at the canal intake about 125 feet upstream from automatic gage, which registers head on dam, and vertical staff at canal overflow, about one mile downstream from the intake gage, which registers head on overflow weir. Gages read and inspected by Howard Casselberry.

Discharge Measurements.—Made from upstream side of Ford Street Bridge, about one-half mile downstream from chain gage.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and large stones. Chain gage is located on a control section in the river, extending for some distance up and downstream from the gage; probably permanent. The control for the river staff and automatic gages is about 100 feet downstream, where the bed is composed of large stones; probably permanent. The control for canal intake gage is the Schuylkill Navigation Company Dam; permanent. Stage-discharge relation changed during low flows by the use of flashboards on the dam and possible change in amount of gage opening at head of canal. The control for the canal overflow gage is the weir section of the overflow; permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 12.10 feet, chain gage at 2 p. m. July 14 (discharge, about 58,000 second-feet); minimum, 0.56 foot, automatic Water Stage Recorder. at 11 a. m. October 1 (discharge, 635 second-feet).

Ice.—Stage-discharge relation affected by ice during severe winters.

Diversions.—Water is diverted past the gage through the Schuylkill Navigation Company Canal on the Bridgeport side of the river for industrial water supplies. On the Norristown side of the river the water used by the McCarter Iron Works is diverted past the gage but it is returned to the river above the Ford Street Bridge

and is included in the river flow when discharge measurements are made.

Accuracy.—Stage-discharge relation permanent throughout the year. Rating curves well defined from 300 to 10,000 second-feet and fairly well defined above and below those limits. Chain, river staff and canal intake gages read to hundredths twice daily; canal outlet gage read occasionally. Daily discharge ascertained by applying daily mean gage height, computed from automatic water-stage recorder chart, October 1 to December 12 and from daily gage height at chain gage December 13 to September 30, to rating table. Results good.

Cooperation.—Station was established and is maintained in cooperation with Pennsylvania Department of Health, Sanitary Water Board.

Discharge measurements of Schuylkill River at Norristown duing the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
3	Nov. 17	Geo. Weber	2.49	1,470*
4	18	do	7.90	17,100
5	Dec. 12	C. H. Young	4.55	7,190
6	Jan. 24	do	2.98	2,440

* Not including 101 sec. ft., flow in Schuylkill Navigation Company Canal.

Daily Mean Gage Height, in feet, of Schuylkill River at Norristown, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.63	1.38	1.66	3.67	2.96	3.50	3.94	5.57	2.71	5.70	2.54	2.67
2	.66	1.34	2.40	3.17	2.95	3.36	3.72	4.82	2.62	4.32	2.52	2.55
3	.67	4.35	3.60	2.65	2.86	3.20	3.50	4.25	2.56	3.77	2.54	2.72
4	1.85	3.55	2.82	2.74	2.84	3.12	3.37	3.98	2.53	3.40	2.50	3.00
5	1.94	2.25	3.43	2.70	3.35	3.08	3.25	3.78	2.70	3.35	2.50	2.79
6	1.37	1.90	3.56	2.85	4.21	3.00	3.08	3.62	5.10	5.74	2.99	2.73
7	1.20	1.67	3.18	3.02	3.55	2.92	3.11	3.54	4.15	4.59	3.44	3.18
8	1.11	1.54	7.30	3.06	8.30	2.90	3.10	3.28	3.43	3.70	2.94	2.87
9	1.08	1.51	5.45	2.97	8.10	2.98	2.98	3.26	3.19	3.41	2.69	2.70
10	1.28	1.47	3.88	3.00	5.25	2.94	2.85	3.20	3.36	3.17	2.55	2.61
11	1.10	1.46	3.35	2.88	4.04	2.96	2.79	3.10	3.40	3.02	2.84	2.59
12	.93	1.40	3.28	2.80	3.72	3.10	3.27	3.11	3.17	3.04	2.76	2.49
13	4.75	1.35	4.40	2.82	3.46	3.72	3.49	2.98	3.06	4.64	2.66	2.44
14	2.94	1.27	5.19	2.80	3.36	3.85	3.15	2.86	2.96	9.69	2.49	2.48
15	2.04	1.27	4.51	2.78	7.40	3.72	3.77	2.82	3.50	5.54	2.36	2.38
16	1.76	1.28	4.42	2.74	5.10	3.37	3.69	2.82	3.02	4.16	2.34	2.28
17	1.59	1.55	5.05	2.67	4.32	3.30	3.47	2.76	2.72	3.51	3.38	2.31
18	2.30	6.14	4.29	2.64	4.28	3.54	3.35	2.74	2.65	3.17	4.83	2.35
19	6.20	3.85	3.91	2.72	3.86	3.76	3.23	3.44	2.77	3.04	3.07	2.29
20	5.90	3.00	3.74	3.67	3.64	3.40	3.12	3.91	2.86	2.97	2.74	2.81
21	4.32	2.40	3.63	2.96	3.42	3.28	2.99	3.82	2.65	2.92	2.60	2.68
22	3.37	2.24	3.51	2.80	3.30	3.28	3.37	3.80	2.89	2.82	2.65	2.46
23	2.77	2.06	3.39	2.88	6.30	3.31	4.57	3.28	3.03	2.91	2.81	2.36
24	2.32	1.93	3.27	2.98	7.30	3.34	5.97	3.14	3.75	2.96	2.63	2.28
25	2.08	1.87	3.09	3.90	5.10	3.44	4.32	3.00	3.09	2.77	2.53	2.20
26	1.86	1.76	2.99	3.54	4.12	3.44	3.85	2.91	4.00	2.66	3.22	2.23
27	1.74	1.68	2.98	3.13	3.86	3.31	3.71	3.01	4.47	2.74	3.37	2.18
28	1.67	1.80	2.97	3.06	3.68	3.24	8.37	2.92	3.91	5.34	2.94	2.15
29	1.58	1.95	2.99	2.48	3.54	3.17	7.46	2.89	3.61	3.02	2.77	2.20
30	1.50	1.80	3.38	2.69	-------	4.00	6.22	2.78	6.25	2.74	2.70	2.47
31	1.47	-------	3.24	2.94	-------	4.42	-------	2.80	-------	2.61	2.77	-------

NOTE—Gage heights Oct. 1 to Dec. 12 computed from Automatic Water Stage Recorder Graph; Dec. 13 to Sept. 30 from chain gage observations. Gage height Oct. 4, 13, 18, 19, Nov. 3, 4, 17, Dec. 2, 8 and 9 correspond to discharge averaged for intervals of day.

Daily discharge, in second-feet, of Schuylkill River at Norristown, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	758	1,970	2,520	4,210	2,360	3,660	4,800	11,400	1,860	11,900	1,600	1,770
2	758	1,880	4,590	2,910	2,360	3,400	4,210	7,890	1,680	6,060	1,510	1,600
3	758	12,800	8,930	1,770	2,150	2,910	3,660	5,730	1,600	4,500	1,600	1,860
4	3,010	8,720	5,900	1,960	2,150	2,680	3,400	5,100	1,600	3,400	1,510	2,460
5	3,280	3,980	8,120	1,860	3,400	2,680	2,910	4,500	1,860	3,400	1,510	2,050
6	1,880	3,140	8,930	2,150	5,730	2,460	2,680	3,930	9,180	11,900	2,460	1,960
7	1,600	2,520	7,340	2,460	3,930	2,250	2,680	3,660	5,730	7,100	3,400	2,910
8	1,430	2,290	37,400	2,680	27,700	2,250	2,680	3,150	3,400	4,210	2,360	2,150
9	1,430	2,180	20,600	2,360	26,300	2,460	2,460	3,150	2,910	3,400	1,860	1,860
10	1,780	2,080	10,300	2,460	9,620	2,360	2,150	2,910	3,400	2,910	1,600	1,680
11	1,430	2,080	8,120	2,250	5,100	2,360	2,060	2,680	3,400	2,460	2,150	1,680
12	1,180	1,970	7,730	2,050	4,210	2,680	3,150	2,680	2,910	2,460	1,960	1,510
13	15,600	1,880	6,400	2,050	3,660	4,210	3,660	2,460	2,680	7,100	1,770	1,430
14	6,250	1,690	9,620	2,050	3,400	4,500	2,910	2,150	2,360	38,800	1,510	1,510
15	3,410	1,690	6,740	2,050	21,500	4,210	4,500	2,050	3,660	10,900	1,270	1,350
16	2,760	1,780	6,400	1,960	9,180	3,400	4,210	2,050	2,460	5,730	1,270	1,190
17	2,400	2,290	3,740	1,770	6,060	3,150	3,660	1,960	1,860	3,660	3,400	1,190
18	4,280	26,100	6,060	1,770	6,060	3,660	3,400	1,960	1,770	2,910	7,890	1,270
19	27,000	9,800	4,800	1,860	4,800	4,500	2,910	3,400	1,960	2,460	2,680	1,190
20	24,400	6,600	4,210	4,210	3,930	3,400	2,680	4,800	2,150	2,360	1,960	2,050
21	12,500	4,590	3,930	2,360	3,400	3,150	2,460	4,500	1,770	2,250	1,680	1,860
22	8,120	3,980	3,660	2,050	3,150	3,150	3,400	4,500	2,250	2,050	1,770	1,430
23	5,900	3,690	3,400	2,250	14,900	3,150	7,100	3,150	2,460	2,250	2,050	1,270
24	4,280	3,280	3,150	2,460	20,800	3,150	13,400	2,680	4,500	2,360	1,770	1,190
25	3,690	3,010	2,680	4,800	9,180	3,400	6,060	2,460	2,680	1,960	1,600	1,050
26	3,010	2,760	2,460	3,660	5,410	3,400	4,500	2,250	5,100	1,770	2,910	1,120
27	2,760	2,630	2,460	2,680	4,800	3,150	4,210	2,460	6,740	1,960	3,400	1,050
28	2,520	2,880	2,360	2,680	4,210	2,910	28,400	2,250	4,800	10,100	2,360	980
29	2,400	3,280	2,460	1,510	3,660	2,910	22,100	2,250	3,930	2,460	1,960	1,050
30	2,180	2,880	3,400	1,860	-------	5,100	14,300	2,060	14,300	1,960	1,860	1,430
31	2,080	-------	2,910	2,360	-------	6,400	-------	2,050	-------	1,680	1,960	-------

NOTE—Discharge does not include the water diverted past the gage through the Schuylkill Navigation Company Canal. Discharge Oct. 4, 13, 18, 19, Nov. 3, 4, 17, Dec. 2, 8 and 9 averaged for intervals of the day.

Monthly discharge of Schuylkill River at Norristown, for the year ending Sept. 30, 1928

(Drainage area 1,760 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	27,000	758	4,990	2.90	3.34
November	26,100	1,690	4,350	2.54	2.83
December	37,400	2,360	6,980	4.05	4.67
January	4,800	1,510	2,440	1.45	1.67
February	27,700	2,150	7,690	4.45	4.80
March	6,400	2,250	3,320	1.96	2.26
April	28,400	2,050	5,690	3.31	3.69
May	11,400	1,960	3,490	2.06	2.38
June	14,300	1,600	3,570	2.10	2.34
July	38,800	1,680	5,430	3.16	3.64
August	7,890	1,270	2,210	1.32	1.52
September	2,910	980	1,570	.943	1.05
The Year	38,800	758	4,300	2.51	34.19

NOTE—Discharge does not include the quantity of water diverted past the gage through the Schuylkill Navigation Company Canal. Run-off does include the quantity of water diverted.

DELAWARE BASIN—STATION NO. 18

BRANDYWINE CREEK AT CHADDS FORD

Location.—At two-span steel Pennsylvania Railroad bridge, Chadds Ford, Delaware County.

Drainage Area.—285 square miles.

Records Available.—August 1, 1911, to September 30, 1928.

Gages.—Standard chain attached to upstream side of bridge and automatic water stage recorder installed May 21, 1927, with stream-side of well on line with face of left abutment 30 feet upstream from chain gage. Chain gage read and automatic water stage recorder inspected by H. W. Guest. Elevation of gage zeros 150.18 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—The right bank is low and the stream begins to overflow a flat 700 feet wide at a stage of about 6 feet. Left bank is high and not subject to overflow. Bed is composed of mud, gravel and stones. Control is at the first of a series of low riffles, about 150 feet downstream from the gage, where the bed is composed of gravel; shifts occasionally.

Extremes of Discharge.—Maximum stage recorded during the year, 11.0 feet at 1 a. m. August 18 (discharge, about 13,000 second-feet); minimum stage, 0.95 foot at 7 a. m. January 29 (discharge, 110 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—Fluctuations in stage during low water are caused by the operation of a mill about 200 feet upstream from the gage.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,200 second-feet and fairly well defined from 1,200 to 2,000 and 6,000 to 10,000 second-feet. Chain gage read to hundredths several times weekly. Daily discharge ascertained by applying daily mean gage height, computed from automatic water stage recorder graph, to rating table. Results good, except for medium and high stages, when they may be only fair.

Cooperation.—The well and shelter house for the automatic water stage recorder were furnished by the Water Department of Wilmington, Delaware.

Discharge measurements of Brandywine Creek at Chadds Ford during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
54	June 26	Geo. Weber	2.56	670

Daily Mean Gage Height, in feet, of Brandywine Creek at Chadds Ford, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.19	1.63	1.94	2.62	1.88	2.45	2.06	2.73	1.79	2.20	1.76	1.89
2	1.18	1.62	2.88	1.88	1.83	2.30	1.98	2.55	1.76	2.04	1.75	1.82
3	1.21	3.91	3.44	2.21	1.73	2.22	1.93	2.41	1.68	1.95	1.67	2.40
4	3.45	2.82	2.44	2.08	1.79	2.13	1.91	2.33	1.70	2.00	1.62	2.23
5	1.89	2.24	2.68	2.01	3.05	2.13	1.89	2.26	2.02	2.21	1.59	1.90
6	1.50	1.98	2.67	1.88	2.65	2.04	1.85	2.27	7.07	2.54	1.56	2.48
7	1.34	1.84	2.64	1.89	2.21	2.03	1.82	2.23	3.14	2.07	1.64	2.67
8	1.44	1.78	7.29	1.94	7.14	2.02	1.84	2.14	2.36	1.90	1.62	2.22
9	1.80	1.82	3.87	2.02	5.56	2.11	1.77	2.28	2.44	1.80	1.57	2.01
10	1.83	1.80	2.90	2.02	3.42	2.31	1.75	2.26	3.38	1.78	1.52	1.92
11	1.51	1.77	2.82	1.94	2.65	2.36	1.77	2.11	2.28	1.75	1.78	1.85
12	1.49	1.75	3.10	1.93	2.45	2.63	2.50	2.12	2.12	1.73	2.66	1.80
13	6.15	1.68	2.97	1.92	2.28	3.00	2.12	1.98	2.05	1.93	2.06	1.78
14	2.60	1.67	2.92	1.92	3.25	2.54	2.05	1.94	2.04	6.23	1.71	1.93
15	1.95	1.67	2.63	1.90	5.97	2.32	2.20	1.92	3.21	3.28	1.58	1.76
16	1.78	1.68	2.77	1.86	3.02	2.18	1.88	1.88	2.02	2.25	1.53	1.73
17	1.69	2.45	2.92	1.84	2.70	2.22	1.83	1.87	1.86	2.01	4.77	1.69
18	1.86	6.77	2.50	1.83	2.95	2.58	1.81	2.06	1.84	1.90	6.11	1.67
19	4.10	2.87	2.32	1.92	2.61	2.80	1.77	2.70	2.27	1.83	2.80	1.92
20	4.22	2.35	2.23	2.60	2.42	2.42	1.71	2.56	2.70	1.80	2.37	2.43
21	2.79	2.18	2.30	1.65	2.32	2.26	1.70	2.29	2.05	1.75	2.18	1.98
22	2.20	2.13	2.28	2.13	2.20	2.18	2.28	2.59	5.23	1.79	2.25	1.80
23	2.04	2.07	2.24	1.82	5.07	2.16	3.12	2.13	3.28	1.92	2.09	1.72
24	1.95	2.01	2.15	1.78	4.26	2.07	4.68	1.96	4.29	1.82	2.01	1.68
25	1.86	2.00	2.01	3.05	2.77	2.06	2.60	1.87	3.00	1.71	1.95	1.64
26	1.80	1.94	2.03	2.01	2.43	2.05	2.20	1.91	2.55	1.65	2.31	1.75
27	1.76	1.93	1.98	1.85	2.38	1.99	2.19	2.19	2.35	1.82	2.31	1.67
28	1.72	2.26	1.98	1.72	2.35	1.89	6.88	1.99	2.21	5.02	2.14	1.63
29	1.69	2.32	2.20	1.43	2.32	1.89	4.45	1.89	2.45	2.18	1.98	1.97
30	1.67	2.06	2.39	2.13	-------	2.45	3.02	1.84	2.46	1.91	1.92	2.90
31	1.63	-------	2.38	1.95	-------	2.45	-------	1.94	-------	1.77	2.14	-------

NOTE—Stage-discharge relation Jan. 30 to Feb. 2 affected by ice.

Daily discharge, in second-feet, of Brandywine Creek at Chadds Ford, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	177	332	442	727	340	657	482	774	385	545	367	422
2	174	314	868	422	340	589	461	727	367	482	367	385
3	183	1,370	1,110	545	367	545	442	634	349	442	332	634
4	1,110	821	657	502	385	524	422	612	349	461	314	567
5	422	567	774	461	915	524	422	567	461	545	314	422
6	280	461	774	422	727	482	404	567	3,630	680	297	680
7	226	404	727	422	545	482	385	567	962	482	332	774
8	260	385	3,870	442	3,630	461	404	524	612	422	314	545
9	385	385	1,370	461	2,370	502	367	589	657	385	297	461
10	404	385	868	461	1,110	589	367	567	1,110	385	280	422
11	280	367	821	442	727	612	367	502	589	367	385	404
12	277	367	962	442	657	727	680	502	502	367	774	385
13	2,810	349	915	422	589	915	502	461	482	442	482	385
14	727	332	868	422	1,010	680	482	442	482	2,810	349	442
15	442	332	727	422	2,660	589	545	422	1,010	1,060	314	367
16	385	349	821	404	915	545	422	422	461	567	297	367
17	349	657	868	404	774	545	404	404	422	461	1,860	349
18	404	3,330	680	404	915	727	385	482	404	422	2,740	332
19	1,470	868	589	422	727	821	367	774	567	404	821	422
20	1,530	612	567	727	634	634	349	727	774	385	612	657
21	821	545	589	332	589	567	349	589	482	367	545	461
22	545	524	589	524	545	545	589	727	2,100	385	567	385
23	482	482	567	385	2,040	524	962	524	1,060	422	502	349
24	442	461	524	385	1,580	482	1,800	442	1,580	385	461	349
25	404	461	461	915	821	482	727	404	915	349	442	332
26	385	442	482	461	657	482	545	422	727	332	589	367
27	367	442	461	404	634	461	545	545	612	385	589	332
28	349	567	461	349	612	422	3,420	461	545	1,980	524	332
29	349	589	545	256	589	422	1,640	422	657	545	461	442
30	332	482	634	300	-------	657	915	404	657	422	422	868
31	332	-------	634	360	-------	657	-------	442	-------	367	524	-------

NOTE—Discharge estimated Jan. 30 to Feb. 2, because of ice, from weather records, study of gage height graph and comparison with similar studies for Schuylkill River at Pottstown and Perkiomen Creek at Graters Ford.

Monthly discharge of Brandywine Creek at Chadds Ford, for the year ending Sept. 30, 1928

(Drainage area 285 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	2,810	174	552	1.94	2.24
November	3,330	314	599	2.10	2.34
December	3,870	442	814	2.86	3.30
January	915	256	453	1.59	1.83
February	3,630	340	979	3.44	3.71
March	915	422	576	2.02	2.33
April	3,420	349	672	2.36	2.63
May	774	404	537	1.88	2.17
June	3,630	349	797	2.80	3.12
July	2,810	332	582	2.04	2.35
August	2,740	280	564	1.98	2.28
September	868	332	455	1.60	1.78
The Year	3,870	174	630	2.21	30.08

SUSQUEHANNA BASIN

SUSQUEHANNA BASIN—STATION NO. 1

NORTH BRANCH SUSQUEHANNA RIVER AT BINGHAMTON, N. Y.

Location.—At four-span steel highway bridge, Washington Street, Binghamton, Broome County, about 500 feet upstream from mouth of Chenango River.

Drainage Area.—2,400 square miles.

Records Available.—July 31, 1901, to December 31, 1912, and January 23, 1915 to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read to hundredths twice daily by C. F. Hand; during high stages more frequently. Elevation of gage zero 821.49 feet, United States Geological Survey datum.

Discharge Measurements.—Measurements were discontinued in 1912, as the stage-discharge relation is sometimes affected by backwater from the Chenango River.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of fine and coarse gravel.

Extremes of Stage.—Maximum gage height during the year estimated from hydrograph, 16.60 feet at midnight October 19-20; minimum, 2.00 feet at 8 a. m. September 28.

Ice.—Stage-discharge relation usually affected by ice.

Flood Warning.—Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of North Branch Susquehanna River at Binghamton, N. Y., for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.18	3.19	8.51	7.94	3.34	3.23	5.18	9.54	3.09	8.50	3.14	2.52
2	2.16	3.09	7.66	7.45	3.46	3.03	4.86	8.48	3.03	6.40	3.14	2.45
3	2.11	3.12	7.26	5.53	3.40	2.91	4.72	6.92	3.01	4.97	3.29	2.42
4	2.61	5.23	6.53	4.27	2.88	2.94	5.00	5.82	2.96	4.18	2.98	2.43
5	2.74	7.92	5.76	3.89	3.16	2.77	5.56	5.18	4.39	3.80	2.95	2.41
6	3.11	7.13	5.59	4.02	3.61	3.06	6.01	5.04	9.06	4.20	3.27	2.52
7	2.76	6.01	5.40	4.31	3.30	3.11	5.96	5.03	6.67	3.66	3.64	2.43
8	2.63	5.29	8.78	4.50	3.30	2.80	6.45	4.52	5.38	3.21	4.42	2.42
9	2.50	4.82	10.29	4.70	4.26	2.71	6.54	4.09	4.72	3.05	4.27	2.35
10	2.47	4.50	8.43	4.61	4.94	2.56	5.50	3.78	6.00	2.92	3.94	2.29
11	2.39	4.67	6.54	4.27	4.19	2.86	4.91	3.62	5.28	2.87	3.92	2.21
12	2.51	5.75	6.12	3.98	3.63	2.67	4.74	3.41	4.38	2.87	3.78	2.16
13	4.75	5.57	7.11	3.72	3.31	3.19	4.83	3.18	3.83	2.80	3.34	2.16
14	5.03	4.89	9.47	3.97	3.10	6.66	4.65	3.08	3.55	3.23	3.03	2.15
15	4.09	4.50	9.20	4.12	6.79	8.20	5.40	2.95	3.41	3.68	2.94	2.11
16	3.45	4.17	7.78	3.95	7.38	5.87	5.22	2.92	3.34	3.49	2.75	2.11
17	3.29	4.68	7.87	3.62	5.56	4.34	4.60	2.80	3.04	2.83	2.70	2.12
18	5.30	10.13	6.97	3.52	4.33	3.63	4.17	2.74	2.96	2.74	2.63	2.14
19	13.59	9.34	5.65	3.47	3.66	3.59	3.92	2.89	3.53	2.68	2.60	2.11
20	14.87	7.40	5.29	3.33	3.38	3.28	3.68	4.20	4.41	2.56	2.55	2.12
21	11.87	5.93	4.97	2.99	3.06	3.24	3.48	4.73	3.92	2.52	2.44	2.11
22	8.87	5.28	4.88	3.02	2.97	3.18	3.98	4.15	4.02	3.02	2.52	2.12
23	7.19	5.04	4.58	2.97	3.53	3.16	6.40	5.66	4.30	4.32	2.58	2.13
24	5.97	5.29	4.15	3.20	6.57	3.86	8.53	4.22	4.02	6.79	2.56	2.12
25	5.09	7.41	3.69	4.09	6.47	8.15	8.02	3.74	4.06	4.88	2.51	2.12
26	4.47	6.84	3.62	4.59	4.31	10.68	6.88	3.41	5.17	3.69	2.53	2.08
27	4.03	7.57	3.75	3.92	3.44	11.32	6.00	3.25	5.42	3.47	2.54	2.05
28	3.78	10.50	3.52	3.46	3.42	9.94	5.88	3.08	4.91	3.95	2.55	2.01
29	3.56	10.36	3.69	3.15	3.26	7.46	6.47	2.99	4.85	4.48	2.54	2.01
30	3.39	9.19	5.37	3.45	-------	6.11	7.49	3.15	8.75	3.75	2.49	2.02
31	3.25	-------	6.49	3.35	-------	5.78	-------	3.21	-------	3.33	2.53	-------

NOTE—Stage-discharge relation Dec. 27 and Jan. 30 to Feb. 3 affected by ice.

SUSQUEHANNA BASIN—STATION NO. 2

CHEMUNG RIVER AT CORNING, N. Y.

Location.—At four-span steel highway bridge, Bridge Street, Corning, Steuben County, about one and three quarter miles downstream from confluence of Cohocton and Tioga Rivers.

Drainage Area.—1,940 square miles.

Records Available.—December 1, 1909, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read to tenths once daily by C. H. Voorhees, Jr.; during high stages more frequently. Elevation of gage zero 912.82 feet, United States Geological Survey datum.

Channel and Control.—River is outlined by dykes which confine the flow until gage height 23.6 feet is reached. Bed is composed of gravel.

Extremes of Stage.—Maximum gage height during the year, 14.90 feet at 8 a. m. December 1; minimum, 2.10 feet from 8 a. m. October 1 to 8 a. m. October 5.

Ice.—Stage-discharge relation usually affected by ice.

Flood Warning.—Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of Chemung River at Corning, N. Y., for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.10	2.90	13.95	5.60	3.30	3.50	5.45	10.00	3.45	4.90	2.80	2.60
2	2.10	3.00	9.40	3.60	3.20	3.20	5.10	7.45	3.25	4.35	2.65	2.60
3	2.10	7.00	7.30	3.90	3.20	3.20	5.20	6.30	3.20	3.90	2.60	2.55
4	2.10	8.60	6.35	6.05	3.30	3.10	6.10	5.60	3.20	-------	2.60	2.50
5	2.10	7.25	5.80	5.70	3.80	3.15	5.95	5.10	7.30	4.20	2.60	2.50
6	2.20	6.00	5.50	5.60	3.65	3.40	5.75	4.85	9.10	5.25	3.40	2.50
7	2.20	5.50	5.40	5.50	3.35	3.40	5.85	4.45	7.20	4.20	6.15	2.60
8	2.20	5.20	8.20	4.90	3.45	3.20	8.40	4.20	5.90	3.85	4.75	2.60
9	2.20	4.70	6.20	4.20	4.50	3.20	6.25	3.95	5.20	3.50	3.75	2.50
10	2.20	4.50	5.30	3.65	4.00	3.00	5.50	3.80	5.45	3.45	3.70	2.50
11	2.20	6.15	5.30	3.50	3.35	3.00	5.05	3.65	5.10	3.25	4.60	2.50
12	2.20	5.65	5.20	3.50	3.20	3.15	5.10	3.50	4.50	3.00	3.90	2.50
13	2.90	4.90	5.95	3.55	3.00	6.85	5.25	3.40	4.15	3.20	3.35	2.40
14	3.50	4.45	8.75	3.80	4.40	8.00	5.05	3.25	4.00	3.55	3.15	2.40
15	3.20	4.15	7.10	3.75	9.60	5.80	5.45	3.10	3.85	3.50	2.90	2.40
16	2.80	4.05	6.80	3.55	5.50	4.70	4.80	3.10	3.65	3.40	2.80	2.40
17	2.50	5.10	8.25	3.40	4.65	4.15	4.60	3.10	3.45	3.20	2.80	2.40
18	2.70	11.80	6.00	3.30	4.10	3.90	4.45	3.05	3.25	3.10	2.70	2.40
19	4.00	7.20	5.55	3.30	3.75	3.70	4.15	4.95	3.40	3.00	2.75	2.40
20	9.00	6.20	5.25	3.30	3.45	3.80	4.00	6.05	3.70	2.90	2.90	3.40
21	6.20	5.55	4.95	3.30	3.30	3.70	3.90	4.95	4.15	2.90	2.80	2.50
22	5.30	5.10	4.70	3.30	3.30	3.80	5.60	4.30	5.55	3.00	3.45	2.40
23	4.70	4.80	4.50	3.40	3.80	4.75	8.40	4.20	5.15	3.55	3.25	2.40
24	4.00	-------	4.25	3.35	6.90	6.75	7.50	3.85	4.95	3.45	3.10	2.40
25	3.65	6.95	4.00	3.25	5.10	8.10	6.20	3.70	5.20	3.35	3.00	2.40
26	3.45	6.20	3.90	3.45	5.30	8.20	5.50	3.45	5.20	3.15	2.90	2.40
27	3.30	7.55	3.70	3.30	6.20	9.45	5.00	3.40	4.60	3.35	2.75	2.40
28	3.20	9.10	3.50	3.30	5.30	6.60	5.05	3.35	4.15	3.45	2.60	2.30
29	3.10	8.60	3.75	3.30	4.40	5.70	5.65	3.50	4.65	3.25	2.60	2.30
30	3.00	8.30	4.45	3.30	-------	5.45	9.90	3.50	5.70	3.00	2.70	2.30
31	2.90	-------	5.60	3.30	-------	5.90	-------	3.65	-------	2.90	2.60	-------

NOTE—Gage height Nov. 24 and July 4 not observed. Stage-discharge relation Jan. 3-9, Jan. 23 to Feb. 9 and Feb. 26 to Mar. 4 affected by ice.

NORTH BRANCH SUSQUEHANNA RIVER AT TOWANDA

Location.—At four-span steel highway bridge, Bridge Street, Towanda, Bradford County.

Drainage Area.— 7,770 square miles.

Records Available.—December 1, 1892, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Hiram E. Bull. Elevation of gage zero 693.4 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rock. Control is at a riffle extending downstream from right end of bridge to island and from left side of island to left bank; changed during heavy ice flow of March 1920.

Extremes of Discharge.—Maximum stage during the year, 17.30 feet observed at 8 a. m. October 20, (discharge, 126,000 second-feet); minimum, 0.45 foot from 8 a. m. October 2 to 8 a. m. October 3 and at 6 p. m. September 28 (discharge, 1,180 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined between 800 and 20,000 second-feet and well defined from 20,000 to 167,000 second-feet. Gage read to half-tenths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of North Branch Susquehanna River at Towanda during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
36	Oct. 4	Geo. Weber	0.60	1,350
37	Apr. 11	do	4.95	19,900

Daily Mean Gage Height, in feet, of North Branch Susquehanna River at Towanda, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.50	2.45	9.48	7.60	2.80	2.70	5.55	12.90	2.58	9.08	2.15	1.30
2	.45	2.28	10.58	6.40	3.25	2.45	4.68	10.30	2.40	6.90	2.05	1.25
3	.50	3.40	8.15	4.95	4.45	2.35	4.58	7.70	2.25	5.15	2.18	1.20
4	.58	6.88	6.80	3.98	5.00	2.30	5.00	6.35	2.25	4.20	2.05	1.12
5	.95	8.00	5.92	3.30	3.20	2.10	5.52	5.35	4.20	3.70	1.98	1.10
6	1.52	7.65	5.48	3.15	3.15	1.75	5.80	4.80	8.90	4.85	2.30	1.05
7	1.68	6.10	5.70	3.40	3.05	1.90	5.85	4.50	9.15	4.00	3.12	1.10
8	1.35	5.10	8.60	3.20	3.05	1.78	7.15	4.20	6.52	3.25	3.85	1.05
9	1.15	4.52	10.32	3.75	3.80	1.95	7.10	3.80	5.15	2.70	3.40	.95
10	1.08	4.20	8.25	4.00	4.75	1.65	5.85	3.45	6.32	2.58	3.05	.92
11	.98	4.55	6.48	3.75	4.20	1.72	4.88	3.15	5.70	2.48	3.35	.88
12	.90	5.32	5.60	3.48	3.45	1.82	4.50	2.95	4.50	2.50	3.20	.82
13	1.50	5.30	6.40	3.28	2.98	2.80	4.85	2.75	3.70	2.30	2.70	.75
14	3.72	4.62	9.50	3.28	2.60	5.90	4.55	2.55	3.28	2.40	2.25	.65
15	3.48	4.10	9.95	3.55	6.80	7.52	4.95	2.40	3.05	2.70	2.02	.62
16	2.70	3.85	8.62	3.65	7.80	6.10	5.10	2.25	2.98	2.85	1.85	.60
17	2.30	4.68	9.70	3.40	5.90	4.52	4.48	2.15	2.68	2.40	1.72	.60
18	2.85	11.95	8.05	3.08	4.38	3.75	4.00	2.10	2.40	1.95	1.60	.60
19	11.30	11.00	6.20	2.92	3.50	3.15	3.60	2.35	2.30	1.80	1.58	.60
20	17.02	8.00	5.30	2.85	3.15	3.00	3.38	3.88	3.58	1.65	1.45	.60
21	13.95	6.25	5.00	2.48	2.65	2.85	3.15	5.30	3.75	1.52	1.38	.65
22	9.45	5.32	4.70	2.25	2.35	2.72	4.10	4.30	4.05	1.50	1.80	.60
23	7.05	4.90	4.45	2.10	2.65	2.88	7.10	4.50	4.75	2.12	2.15	.60
24	5.70	4.90	4.05	2.55	6.00	4.95	9.35	4.50	4.20	4.25	1.92	.58
25	4.75	7.00	3.52	2.80	6.50	9.20	8.50	3.45	3.98	4.52	1.80	.55
26	4.05	7.15	3.25	3.50	4.52	10.40	7.02	3.10	5.75	3.25	1.65	.52
27	3.58	7.88	3.30	3.28	3.22	11.30	5.95	2.80	5.75	2.65	1.52	.50
28	3.22	10.75	3.35	2.85	3.02	10.60	5.75	2.55	5.08	2.55	1.55	.48
29	2.98	11.25	3.20	2.45	2.80	7.32	6.70	2.45	4.62	3.70	1.42	.50
30	2.75	10.10	3.88	2.20	-------	6.50	9.55	2.50	8.08	3.00	1.35	.50
31	2.55	-------	5.65	3.05	-------	6.30	-------	2.55	-------	2.42	1.30	-------

NOTE—Stage-discharge relation Dec. 26-28 and Jan. 30 to Feb. 5 affected by ice.

Daily discharge, in second-feet, of North Branch Susquehanna River at Towanda, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,230	5,970	49,700	36,100	4,400	7,330	23,300	76,800	6,880	46,800	5,140	2,470
2	1,180	5,550	58,100	28,300	4,800	5,970	18,000	55,800	5,970	31,500	4,390	2,370
3	1,230	10,900	40,300	19,700	5,000	5,970	17,500	36,800	5,140	20,900	5,140	2,270
4	1,350	31,500	30,800	14,100	6,000	5,550	19,700	28,300	5,140	15,200	4,390	2,090
5	1,840	38,900	25,100	10,400	8,500	4,750	22,700	22,100	15,200	12,500	4,390	2,090
6	2,920	36,100	22,700	9,900	9,900	3,600	24,500	18,600	45,300	18,600	5,550	2,000
7	3,450	26,400	23,900	10,900	8,860	4,060	24,500	16,900	47,500	14,100	9,380	2,090
8	2,580	20,300	43,100	9,900	8,860	3,750	33,500	15,200	28,900	9,900	13,000	2,000
9	2,180	16,900	55,800	13,000	13,000	4,220	32,800	13,000	20,900	7,330	10,900	1,840
10	2,090	15,200	40,300	14,100	18,600	3,310	24,500	10,900	27,600	6,880	8,860	1,760
11	1,920	17,500	28,900	13,000	15,200	3,450	19,200	9,900	23,900	6,410	10,900	1,760
12	1,760	21,500	23,300	11,400	10,900	3,750	16,900	8,860	16,900	6,410	9,900	1,610
13	2,920	21,500	28,300	10,400	8,860	7,860	18,600	7,860	12,500	5,550	7,330	1,540
14	12,500	17,500	49,700	10,400	6,880	25,100	17,500	6,880	10,400	5,970	5,140	1,410
15	11,400	14,700	53,500	12,000	30,800	35,400	19,700	5,970	8,860	7,330	4,390	1,350
16	7,330	13,000	43,100	12,000	37,500	26,400	20,300	5,140	8,860	7,860	3,900	1,350
17	5,550	18,000	51,200	10,900	25,100	16,900	16,900	5,140	7,330	5,970	3,450	1,350
18	7,860	69,200	38,900	9,380	16,400	13,000	14,100	4,750	5,970	4,220	3,170	1,350
19	63,600	61,200	27,000	8,340	11,400	9,900	12,000	5,970	5,550	3,750	3,170	1,350
20	122,000	38,900	21,500	7,860	9,900	8,860	10,900	13,600	12,000	3,310	2,800	1,350
21	87,000	27,000	19,700	6,410	6,880	7,860	9,900	21,500	13,000	2,920	2,690	1,410
22	49,000	21,500	18,000	5,140	5,970	7,330	14,700	15,800	14,100	2,920	3,750	1,350
23	32,200	19,200	16,400	4,750	6,880	8,340	32,800	16,900	18,600	4,750	5,140	1,350
24	23,900	19,200	14,100	6,880	25,800	19,700	49,000	16,900	15,200	15,200	4,060	1,350
25	18,600	32,200	11,400	7,860	28,900	47,500	42,400	10,900	14,100	16,900	3,750	1,290
26	14,100	33,500	9,500	11,400	16,900	56,500	32,200	9,380	24,500	9,900	3,310	1,230
27	12,000	38,200	9,000	10,400	9,900	63,600	25,800	7,860	24,500	6,880	2,920	1,230
28	9,900	59,600	9,000	7,860	8,860	58,100	24,500	6,880	20,300	6,880	3,040	1,230
29	8,860	62,800	9,900	5,970	7,860	34,100	30,200	5,970	17,500	12,500	2,690	1,230
30	7,860	54,300	13,600	4,800	-------	28,900	50,500	6,410	39,600	8,860	2,580	1,230
31	6,880	-------	23,300	4,400	-------	27,600	-------	6,880	-------	5,970	2,470	-------

NOTE—Discharge Dec. 26-28 and Jan. 30 to Feb. 5 estimated, because of ice, from weather records, study of gage height graph and discharge of North Branch Susquehanna River at Conklin, Chenango River at Chenango Forks, Chemung River at Chemung and North Branch Susquehanna River at Danville.

Monthly discharge of North Branch Susquehanna River at Towanda, for the year ending Sept. 30, 1928

(Drainage area 7,770 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	122,000	1,180	17,000	2.19	2.52
November	69,200	5,550	28,900	3.72	4.15
December	58,100	9,000	29,300	3.77	4.35
January	36,100	4,400	11,200	1.44	1.66
February	37,500	4,400	13,100	1.69	1.82
March	63,600	3,310	18,000	2.32	2.68
April	50,500	9,900	24,000	3.09	3.45
May	76,800	4,750	15,900	2.05	2.36
June	47,500	5,140	17,400	2.24	2.50
July	46,800	2,920	10,800	1.39	1.60
August	13,000	2,470	5,220	.672	.77
September	2,470	1,230	1,610	.207	.23
The Year	122,000	1,180	16,000	2.06	28.09

SUSQUEHANNA BASIN—STATION NO. 4

TOWANDA CREEK NEAR MONROETON

Location.—At single-span steel highway bridge about one and a half miles southwest of Monroeton, Bradford County.

Drainage Area.—218 square miles.

Records Available.—January 30, 1914, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Leon D. Pepper.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Neither bank is subject to overflow. Bed is composed of coarse gravel. Control consists of the foundation timbers of an old wooden dam and a gravel bar which probably shifts.

Extremes of Discharge.—Maximum stage during the year, 8.50 feet observed at 5 p. m. October 19 (discharge, about 16,000 second-feet); minimum, 2.19 feet at 7 a. m. September 16 (discharge, 15 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation was changed on October 19, 1927, and affected by ice. Two rating tables used; one applicable to October 19, fairly well defined below 300 second-feet; the other applicable subsequent to October 19, fairly well defined below 500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Towanda Creek near Monroeton during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
37	Oct. 4a	Geo. Weber	2.84	107
38	5b	do	2.65	65.5
39	5b	do	2.64	65.5
40	Apr. 10	do	3.28	503
41	11	R. P. Mason	3.18	396

a Measurement made by wading 800 feet downstream from gage.
b Measurement made by wading 2,000 feet upstream from gage.

Daily Mean Gage Height, in feet, of Towanda Creek near Monroeton for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.34	2.79	4.01	3.44	2.97	2.82	3.34	5.52	2.69	4.26	2.41	2.34
2	2.33	2.85	3.62	3.45	2.90	2.86	3.23	4.59	2.64	3.64	2.40	2.31
3	2.33	4.14	3.52	3.55	2.92	2.85	3.16	3.99	2.60	3.34	2.38	2.31
4	2.68	4.29	3.37	3.51	2.97	2.81	3.20	3.58	2.72	3.17	2.36	2.31
5	2.64	3.81	3.32	3.35	3.32	2.88	3.24	3.37	4.61	3.60	2.36	2.30
6	2.54	3.55	3.29	3.30	2.95	2.91	3.24	3.22	6.14	3.80	2.50	2.29
7	2.48	3.34	3.74	3.28	3.01	3.02	3.30	3.09	4.35	3.34	3.40	2.28
8	2.48	3.22	5.81	3.07	3.19	2.76	4.02	3.00	3.75	3.10	2.70	2.28
9	2.48	3.16	4.15	2.95	4.21	2.68	3.51	2.94	3.65	2.96	2.56	2.28
10	2.46	3.10	3.57	2.85	3.29	2.74	3.32	2.88	3.88	2.91	2.48	2.26
11	2.44	3.10	3.44	2.79	3.07	2.68	3.19	2.84	3.52	2.94	2.45	2.25
12	2.47	3.15	3.46	2.79	2.95	2.72	3.28	2.79	3.21	2.89	2.42	2.24
13	3.62	3.10	3.50	2.79	2.77	2.94	3.21	2.74	3.06	2.86	2.40	2.22
14	3.12	3.10	4.25	2.91	2.84	3.48	3.39	2.68	3.00	3.04	2.36	2.20
15	2.91	3.04	3.68	2.91	4.01	3.21	3.64	2.64	3.01	2.94	2.34	2.20
16	2.76	3.02	4.30	2.83	3.31	3.02	3.34	2.62	2.85	2.74	2.31	2.20
17	2.79	3.61	4.44	2.78	3.12	2.94	3.22	2.61	2.78	2.68	2.30	2.20
18	3.50	5.10	3.60	2.77	3.03	3.66	3.12	2.71	2.73	2.62	2.30	2.26
19	6.84	3.94	3.44	2.77	2.98	3.36	3.04	3.12	2.76	2.58	2.36	2.24
20	5.96	3.56	3.36	2.91	2.92	2.94	2.94	3.46	2.76	2.56	2.38	2.27
21	4.40	3.40	3.22	2.95	2.91	2.83	2.90	3.34	2.78	2.54	2.31	2.28
22	3.75	3.31	3.14	2.99	3.04	2.90	4.05	3.21	3.18	2.58	2.64	2.28
23	3.42	3.22	3.11	2.93	3.68	3.15	4.33	3.25	2.96	2.84	2.56	2.26
24	3.25	3.26	3.12	2.92	4.35	3.70	4.45	3.05	2.85	2.70	2.46	2.26
25	3.12	3.38	3.02	3.32	3.30	4.27	3.76	2.94	3.18	2.58	2.42	2.26
26	3.04	3.22	3.00	3.09	3.18	4.20	3.46	2.86	4.00	2.52	2.41	2.28
27	2.96	3.56	2.93	2.99	2.98	4.25	3.29	2.80	3.83	2.52	2.38	2.28
28	2.91	4.03	2.94	3.11	2.91	3.60	3.62	2.76	3.46	2.59	2.36	2.26
29	2.88	4.01	2.90	3.16	2.86	3.36	4.70	2.72	4.35	2.51	2.33	2.26
30	2.84	3.68	2.99	3.09	-------	4.00	5.78	2.72	5.95	2.46	2.31	2.28
31	2.80	-------	3.11	3.04	-------	3.65	-------	2.76	-------	2.44	2.39	-------

NOTE—Stage-discharge relation Jan. 3-7, 21-23, Jan. 28 to Feb. 3, Mar. 5-8 and 18-20 affected by ice.

Daily discharge, in second-feet, of Towanda Creek near Monroeton, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	152	1,280	618	160	166	526	4,300	109	1,670	39	30
2	17	182	775	628	170	187	433	2,250	92	830	37	27
3	17	1,510	675	440	190	182	377	1,280	79	526	35	27
4	77	1,750	553	340	248	161	408	775	121	385	33	27
5	66	1,010	508	300	508	130	441	553	2,250	775	33	26
6	45	725	482	340	236	120	441	424	6,080	1,010	53	25
7	35	526	948	400	272	110	490	324	1,840	526	580	24
8	35	424	5,130	310	400	100	1,280	265	948	330	112	24
9	35	377	1,510	236	1,590	105	675	231	830	242	69	24
10	32	330	725	182	482	130	508	198	1,140	214	50	22
11	30	330	618	152	310	105	400	177	675	231	45	21
12	34	369	637	152	236	121	474	152	416	203	40	20
13	705	330	675	152	143	231	416	130	304	187	37	18
14	284	330	1,670	214	177	656	571	105	265	291	33	16
15	165	291	885	214	1,280	416	830	92	272	231	30	16
16	105	278	1,750	172	499	278	526	86	182	130	27	16
17	116	775	2,020	147	346	231	424	82	147	105	26	16
18	595	3,320	775	143	284	200	346	116	125	86	26	22
19	8,570	1,210	618	143	254	180	291	346	138	74	33	20
20	5,760	725	544	214	219	160	231	637	138	69	35	23
21	1,930	580	424	160	214	172	208	526	147	63	27	24
22	948	499	361	130	291	208	1,360	416	392	74	92	24
23	599	424	338	160	885	369	1,840	449	242	177	69	22
24	449	457	346	219	1,840	885	2,020	298	182	112	47	22
25	346	562	278	508	490	1,670	948	231	392	74	40	22
26	291	424	265	324	392	1,590	637	187	1,280	58	39	24
27	242	725	225	259	254	1,670	482	156	1,080	58	35	24
28	214	1,360	231	200	214	775	775	138	637	76	33	22
29	198	1,280	208	180	187	544	2,450	121	1,840	56	29	22
30	177	885	259	160	-------	1,280	5,130	121	5,760	47	27	24
31	156	-------	338	160	-------	830	-------	138	-------	43	36	-------

NOTE—Discharge Jan. 3-7, 21-23, Jan. 28 to Feb. 3, Mar. 5-8 and 18-20 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Fishing Creek at Bloomsburg, Lycoming Creek near Trout Run and Loyalsock Creek at Loyalsock.

Monthly discharge of Towanda Creek near Monroeton, for the year ending Sept. 30, 1928

(Drainage area 218 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	8,570	17	719	3.30	3.80
November	1,750	152	738	3.38	3.77
December	5,130	208	840	3.85	4.44
January	628	130	257	1.18	1.36
February	1,840	160	440	2.02	2.18
March	1,670	100	450	2.06	2.38
April	5,130	208	865	3.97	4.43
May	4,300	82	494	2.27	2.62
June	6,080	79	937	4.30	4.80
July	1,670	43	289	1.32	1.52
August	580	26	59.6	.273	.31
September	30	16	22.5	.103	.11
The Year	8,570	16	508	2.33	31.72

SUSQUEHANNA BASIN—STATION NO. 5

TUNKHANNOCK CREEK AT DIXON

Location.—At single-span steel highway bridge, about two miles east of Tunhannock, at Dixon, Wyoming County.

Drainage Areas.—393 square miles.

Records Available.—January 28, 1914, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by Bertha Dixon.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—The right bank is high, steep, and does not overflow; the left is low but not subject to overflow. Bed is composed of coarse gravel. Control is at a riffle, where the bed is composed of boulders, about 300 feet downstream from the gage; permanent.

Extremes of Discharge.—Maximum stage during the year, 11.05 feet observed at 5 p. m. October 19 (discharge, about 13,600 second-feet); minimum, 1.20 feet at 8 a. m. August 22 (discharge, 37 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 30 and 4,000 second-feet. Gage read to half-tenths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Tunkhannock Creek at Dixon during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
41	Apr. 16	Geo. Weber	3.42	1,150
42	Aug. 8	J. M. Snavely	2.62	627

Daily Mean Gage Height, in feet, of Tunkhannock Creek at Dixon for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.38	2.28	4.10	3.90	2.08	2.38	3.30	5.55	2.30	4.84	1.92	1.98
2	1.30	2.25	3.85	2.70	2.02	2.05	3.10	4.55	2.28	3.70	1.98	2.00
3	1.28	2.15	4.67	2.45	2.00	1.98	3.00	3.90	2.25	3.28	1.92	2.15
4	3.70	3.40	3.65	2.32	2.25	1.78	2.85	3.52	2.78	3.05	1.83	2.05
5	2.65	3.40	3.52	2.35	3.02	1.92	3.00	3.22	4.12	3.05	2.50	1.90
6	2.12	3.15	3.40	2.30	2.32	1.80	3.10	3.32	6.30	3.45	2.90	1.78
7	1.95	2.95	3.25	2.40	2.32	1.98	3.45	3.05	5.20	2.80	2.95	1.68
8	1.95	2.60	6.01	2.55	3.87	1.90	3.72	2.75	3.72	2.55	2.60	1.62
9	1.98	2.60	4.55	2.68	4.20	1.85	3.25	2.70	3.20	2.40	2.45	1.70
10	1.85	2.60	3.50	2.62	3.02	1.90	2.95	2.55	-------	2.40	2.28	1.68
11	1.78	2.80	3.42	2.42	2.65	1.75	2.75	2.50	-------	2.45	2.50	1.60
12	1.70	2.75	3.50	2.40	2.42	2.22	3.37	2.45	-------	2.32	2.10	1.60
13	4.45	2.58	4.00	2.42	2.22	2.95	3.25	2.35	-------	2.32	1.95	1.50
14	3.35	2.45	6.30	2.72	2.50	3.15	3.18	2.20	2.58	2.80	1.88	1.50
15	2.80	2.52	4.60	2.62	4.78	2.80	4.15	2.12	2.60	2.75	1.72	1.42
16	2.55	2.50	3.92	2.48	3.35	2.45	3.50	2.10	2.45	2.32	1.62	1.40
17	3.08	2.65	4.10	2.40	2.95	2.42	3.20	2.08	2.35	2.10	1.68	1.45
18	5.95	6.07	3.50	2.38	2.70	2.35	3.02	2.50	2.42	2.02	1.68	1.55
19	10.15	4.40	3.12	2.20	2.45	2.35	2.90	2.88	2.48	2.17	1.80	1.68
20	8.30	3.72	3.05	2.40	2.20	2.28	2.60	3.20	2.90	2.08	1.70	1.52
21	6.00	3.45	2.98	1.95	3.77	2.08	3.03	3.18	2.65	2.10	1.55	1.52
22	4.55	3.30	2.90	2.05	5.30	2.20	4.55	2.92	3.35	2.08	1.65	1.42
23	3.90	3.08	2.78	2.12	-------	2.35	5.70	3.35	3.02	2.12	1.90	1.52
24	3.48	3.08	2.40	2.25	-------	3.22	5.88	3.40	2.88	1.98	1.75	1.40
25	3.12	3.32	2.35	4.80	2.60	4.35	4.50	3.10	2.76	1.92	1.72	1.32
26	3.00	3.10	2.35	2.77	2.95	4.30	3.90	2.90	2.97	1.78	2.02	1.35
27	2.75	4.20	2.18	2.32	2.55	4.25	3.55	2.72	3.87	2.00	1.98	1.45
28	2.50	5.00	2.15	2.42	2.50	3.55	5.11	2.62	3.40	2.85	1.90	1.42
29	2.58	4.75	2.38	2.22	2.40	3.35	5.94	2.50	4.69	2.45	1.80	1.45
30	2.40	4.08	3.05	2.18	-------	4.10	5.98	2.48	6.96	2.12	2.30	1.40
31	2.32	-------	3.25	2.15	-------	3.62	-------	2.48	-------	2.00	2.40	-------

NOTE—Stage-discharge relation Dec. 25-27, Jan. 5, 20-23 and Jan. 28 to Feb. 1 affected by ice. Gage height Feb. 23 and 24 unsatisfactory and June 10-13 not observed.

Daily discharge, in second-feet, of Tunkhannock Creek at Dixon, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	395	1,800	1,600	260	450	1,070	3,570	395	2,560	216	242
2	49	370	1,500	630	250	272	910	2,340	395	1,410	242	250
3	47	320	2,450	480	250	242	840	1,600	370	1,070	216	320
4	1,410	1,150	1,320	395	370	162	735	1,230	700	875	181	272
5	600	1,150	1,230	400	840	216	840	990	1,800	875	510	208
6	295	950	1,150	395	395	169	910	1,070	4,560	1,190	770	162
7	229	805	1,030	450	395	242	1,190	875	3,040	700	805	130
8	229	570	4,130	540	735	208	1,410	665	1,410	540	570	113
9	242	570	2,340	630	1,900	188	1,030	630	990	450	480	135
10	188	570	1,230	570	840	208	805	540	1,000	450	395	130
11	162	700	1,150	450	600	152	665	510	800	480	510	108
12	135	665	1,230	450	450	345	1,110	480	700	395	295	108
13	2,120	570	1,700	450	345	805	1,030	422	550	395	229	85
14	1,110	480	4,560	630	510	950	990	345	570	700	200	85
15	700	510	2,340	570	2,560	700	1,900	295	570	665	142	69
16	540	510	1,600	510	1,110	480	1,230	295	480	395	113	65
17	910	600	1,800	450	805	450	990	295	422	295	130	75
18	4,130	4,270	1,230	450	630	422	840	510	450	250	130	96
19	11,600	2,120	910	345	480	422	770	770	510	320	169	130
20	7,870	1,410	875	260	345	395	570	990	770	295	135	90
21	4,130	1,190	840	200	1,500	295	875	990	600	295	96	90
22	2,340	1,070	770	220	3,170	345	2,340	770	1,110	295	122	69
23	1,600	910	700	280	1,200	422	3,710	1,110	840	295	208	90
24	1,230	910	450	370	650	990	3,990	1,150	770	242	152	65
25	910	1,070	380	2,560	570	2,120	2,230	910	665	216	142	52
26	840	910	340	665	770	2,010	1,600	770	805	162	250	57
27	665	1,900	320	395	540	1,900	1,320	630	1,600	250	242	75
28	510	2,800	320	340	510	1,320	2,920	570	1,150	735	208	69
29	570	2,560	450	320	450	1,110	3,990	510	2,450	480	169	75
30	450	1,800	875	280	-------	1,800	4,130	510	5,650	295	395	65
31	395	-------	1,030	260	-------	1,320	-------	510	-------	250	450	-------

NOTE—Discharge estimated Dec. 25-27, Jan. 5, 20-23 and Jan. 28 to Feb. 1, because of ice, Feb. 23 and 24, because of unsatisfactory gage height record, and June 10-13, because of no gage height record, from weather records, study of gage height graph and comparison with similar studies for Towanda Creek near Monroeton, Lackawanna River at Moosic and Lackawaxen River near West Hawley.

Monthly discharge of Tunkhannock Creek at Dixon, for the year ending Sept. 30, 1928

(Drainage area 393 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	11,600	47	1,490	3.79	4.37
November	4,270	320	1,130	2.88	3.21
December	4,560	320	1,360	3.46	3.99
January	2,560	200	534	1.36	1.57
February	3,170	250	808	2.06	2.22
March	2,120	152	681	1.73	1.99
April	4,130	570	1,560	3.97	4.43
May	3,570	295	866	2.20	2.54
June	5,650	370	1,200	3.05	3.40
July	2,560	162	575	1.46	1.68
August	805	96	286	.728	.84
September	320	52	119	.303	.34
The Year	11,600	47	884	2.25	30.58

SUSQUEHANNA BASIN—STATION NO. 6

LACKAWANNA RIVER AT MOOSIC

Location.—At single-span steel highway bridge, River Street or Moosic Road, Moosic, Lackawanna County.

Drainage Area.—265 square miles.

Records Available.—August 8, 1913, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Margaret Ross.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of culm and rocks. Control for low stages is at a slight riffle about 50 feet downstream from the gage; for medium and high stages at a pronounced riffle about 1,000 feet downstream; occasionally shifting.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 9.30 feet at 8 p. m. October 19 (discharge about 11,500 second-feet); minimum, 1.88 feet at 8 a. m. October 2, (discharge, 145 second-feet).

Ice.—Stage-discharge relation rarely affected by ice.

Accuracy.—Stage-discharge relation probably permanent except when affected by ice. Rating curve fairly well defined between 100 and 4,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Lackawanna River at Moosic during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
46	Apr. 16	Geo. Weber	Feet 3.42	Sec. ft. 1,040

Daily Mean Gage Height, in feet, of Lackawanna River at Moosic, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.92	2.75	3.70	3.55	2.36	2.69	3.15	5.60	2.73	4.80	2.86	2.43
2	1.90	2.73	3.72	3.06	2.32	2.57	3.05	4.77	2.74	4.10	2.81	2.44
3	2.13	3.02	4.18	2.83	2.24	2.50	2.97	4.25	2.68	3.64	2.76	2.81
4	3.52	3.90	3.76	2.72	2.34	2.40	2.97	3.74	2.85	3.40	2.66	2.72
5	2.73	3.65	3.60	2.70	2.83	2.36	3.01	3.70	3.72	4.30	2.58	2.51
6	2.50	3.50	3.47	2.68	2.47	2.33	3.05	4.05	4.46	4.73	2.90	2.36
7	2.39	3.35	3.89	2.70	2.52	2.36	3.17	3.65	4.35	3.77	3.62	2.37
8	2.42	3.16	5.60	2.73	2.84	2.34	3.65	3.44	3.78	3.39	3.14	2.40
9	2.37	3.10	4.50	2.78	3.65	2.32	3.45	3.32	3.62	3.19	3.06	2.37
10	2.36	3.07	3.80	2.78	3.30	2.34	3.25	3.21	3.74	3.09	3.21	2.31
11	2.21	3.10	3.65	2.70	2.89	2.23	3.15	3.11	3.40	3.11	3.60	2.23
12	2.75	3.14	3.62	2.65	2.72	2.42	3.44	3.07	3.15	3.01	3.05	2.20
13	4.50	3.00	3.90	2.63	2.62	2.74	3.50	2.97	2.96	3.91	2.83	2.14
14	3.62	2.93	4.65	2.68	3.10	3.16	3.35	2.83	2.95	5.28	2.76	2.14
15	3.21	2.90	4.08	2.65	4.15	3.05	3.98	2.81	2.95	4.08	2.66	2.10
16	2.97	2.84	3.75	2.61	3.40	2.72	3.54	2.70	2.79	3.56	2.57	2.17
17	3.64	3.95	3.65	2.57	3.16	2.65	3.32	2.70	2.66	3.28	2.62	2.12
18	5.52	5.45	3.45	2.55	3.08	2.66	3.22	2.88	2.74	3.13	2.62	2.22
19	7.88	4.10	3.35	2.54	2.80	2.59	3.10	3.16	3.13	3.15	2.57	2.21
20	6.92	3.80	3.22	2.58	2.73	2.54	2.98	3.28	3.43	3.19	2.53	2.20
21	5.35	3.50	3.13	2.42	2.59	2.53	2.95	3.24	3.41	3.00	2.52	2.20
22	4.35	3.35	3.06	2.42	2.90	2.55	3.48	3.15	3.52	2.90	2.52	2.20
23	3.90	3.24	3.00	2.34	4.05	2.59	4.35	-------	3.42	2.88	2.48	2.12
24	3.60	3.28	2.84	2.40	3.50	2.85	4.77	3.40	3.40	2.82	2.50	2.09
25	3.35	3.29	2.78	3.12	3.25	3.70	4.27	3.15	3.62	2.71	2.67	2.04
26	3.23	3.20	2.76	2.67	2.85	4.20	3.57	3.06	4.05	2.65	2.66	2.06
27	3.12	3.50	2.72	2.44	2.81	4.75	3.70	3.08	4.12	3.38	2.63	2.02
28	2.96	3.90	2.70	2.45	2.76	3.55	4.12	3.01	3.72	4.00	2.49	2.02
29	2.86	3.85	2.78	2.44	2.71	3.40	4.38	2.86	4.80	3.35	2.39	2.05
30	2.82	3.65	3.00	2.35	-------	3.58	4.88	2.78	6.45	3.03	2.37	2.22
31	2.76	-------	3.11	2.34	-------	3.58	-------	2.81	-------	2.88	2.52	-------

NOTE—Stage-discharge relation Jan. 31 to Feb. 2 affected by ice. Gage height May 23 not observed.

Daily discharge, in second-feet, of Lackawanna River at Moosic, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	158	551	1,320	1,230	280	520	836	3,610	551	2,460	615	371
2	151	551	1,320	757	280	434	757	2,460	551	1,700	582	376
3	236	719	1,800	615	283	407	684	1,800	520	1,230	551	582
4	1,140	1,500	1,410	520	328	356	684	1,320	615	1,050	491	520
5	551	1,230	1,230	520	615	337	719	1,320	1,320	1,900	462	407
6	407	1,140	1,100	520	392	323	757	1,600	2,110	2,340	648	337
7	351	1,010	1,500	520	407	337	836	1,230	2,000	1,410	1,230	342
8	366	836	3,610	551	615	328	1,230	1,100	1,410	1,050	836	356
9	342	795	2,110	582	1,230	318	1,100	961	1,230	876	757	342
10	337	757	1,410	582	961	328	918	876	1,320	795	876	314
11	269	795	1,230	520	648	278	836	795	1,050	795	1,230	278
12	551	836	1,230	491	520	366	1,100	757	836	719	757	265
13	2,110	719	1,500	491	462	551	1,140	684	684	1,500	615	240
14	1,230	684	2,220	520	795	836	1,010	615	684	3,150	551	240
15	876	648	1,700	491	1,800	757	1,600	582	684	1,700	491	224
16	684	615	1,410	462	1,050	520	1,140	520	582	1,230	434	253
17	1,230	1,600	1,230	434	836	491	961	520	491	961	462	232
18	3,450	3,300	1,100	434	795	491	876	648	551	836	462	274
19	8,160	1,700	1,010	434	582	462	795	836	836	836	434	269
20	5,980	1,410	876	462	551	434	719	961	1,100	876	434	265
21	3,300	1,140	836	366	462	434	684	918	1,050	719	407	265
22	2,000	1,010	757	366	648	434	1,140	836	1,140	648	407	265
23	1,500	918	719	328	1,600	462	2,000	1,200	1,050	648	397	232
24	1,230	961	615	356	1,140	615	2,460	1,050	1,050	582	407	220
25	1,010	961	582	795	918	1,320	1,900	836	1,230	520	491	201
26	918	876	551	491	615	1,800	1,230	757	1,600	491	491	209
27	795	1,140	520	376	582	2,460	1,320	795	1,700	1,050	491	194
28	684	1,500	520	382	551	1,230	1,700	719	1,320	1,600	402	194
29	615	1,410	582	376	520	1,050	2,000	615	2,460	1,010	351	205
30	582	1,230	719	332	-------	1,230	2,590	582	4,990	757	342	274
31	551	-------	795	300	-------	1,230	-------	582	-------	648	407	-------

NOTE—Discharge estimated Jan. 31 to Feb. 2, because of ice, and May 23, because of no gage height record, from weather records, study of gage height graph and comparison with similar studies for Lackawaxen River near West Hawley.

Monthly discharge of Lackawanna River at Moosic, for the year ending Sept. 30, 1928

(Drainage area 265 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	8,160	151	1,350	5.09	5.87
November	3,300	551	1,080	4.08	4.55
December	3,610	520	1,210	4.57	5.27
January	1,230	300	503	1.90	2.19
February	1,800	280	706	2.66	2.87
March	2,460	278	682	2.57	2.96
April	2,460	684	1,190	4.49	5.01
May	3,610	520	1,040	3.92	4.52
June	4,990	491	1,220	4.60	5.13
July	3,150	491	1,160	4.38	5.05
August	1,230	342	565	2.13	2.46
September	582	194	292	1.10	1.23
The Year	8,160	151	918	3.46	47.11

SUSQUEHANNA BASIN—STATION NO. 7

NORTH BRANCH SUSQUEHANNA RIVER AT WILKES-BARRE

Location.—At four-span steel highway bridge, Market Street, Wilkes-Barre, Luzerne County.

Drainage Area.—9,960 square miles.

Records Available.—November 1, 1890, to September 30, 1928.

Gage.—Standard chain attached to upstream side of Market Street Bridge until December 18, 1927, when it was removed on account of new bridge construction. On January 17, 1928, it was fastened to the downstream side of the North Street Bridge, about 2,000 feet upstream from its former location. Gage read by Milton Wentz. Elevation of gage zero at both bridges 511.03 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of Market Street Bridge, except during extremely high stages when they are taken from the Port Bowkley Railroad bridge, where the entire discharge of the stream is confined to one channel, until 1927 and from the downstream side of the North Street Bridge since that date.

Channel and Control.—Right bank is low and subject to overflow at a stage of about 18.5 feet; left bank subject to overflow only at extremely high stages. Bed is composed of culm, sand and gravel. Control for low stages at both bridges is at a riffle about 4,000 feet downstream from the Market Street Bridge, occasionally changes. For high stages the control is probably the dam at Nanticoke, 9 miles downstream from the gage.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 24.70 feet at 8 p. m. October 20 (discharge, 141,000 second-feet); minimum, 0.87 foot at 8 a. m. October 3 (discharge, 1,450 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation frequently changed due to the construction of the new Market Street Bridge. Gage read to

hundredths once daily; during high stages more frequently. Daily discharge determined from a continuous daily discharge graph, drawn in conjunction with similar graphs for Towanda and Danville, taking into consideration the daily gage heights, three discharge measurements and prorating values determined from previous ratings. Results fair.

Discharge measurements of North Branch Susquehanna River at Wilkes-Barre during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
66	May 9	Geo. Weber	8.02	17,400

Daily Mean Gage Height, in feet, of North Branch Susquehanna River at Wilkes-Barre for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.94	4.21	13.56	-------	5.03	5.95	10.82	20.15	5.35	16.00	5.30	3.68
2	.91	3.98	15.20	-------	4.72	5.62	9.70	19.30	5.47	13.80	4.70	3.60
3	1.05	4.08	14.26	-------	4.35	5.28	8.95	15.40	5.21	11.10	4.47	3.57
4	2.38	7.61	11.86	-------	4.10	4.78	8.73	12.60	4.90	9.55	4.35	3.58
5	2.19	11.56	10.06	-------	4.53	4.50	9.35	10.95	5.85	9.15	4.12	3.35
6	1.82	11.66	9.06	-------	5.18	4.42	9.95	9.96	11.30	9.85	4.65	3.10
7	2.24	10.14	8.76	-------	4.94	3.98	10.27	9.15	16.61	9.70	6.30	3.08
8	2.59	8.72	11.46	-------	5.30	3.87	10.83	8.65	14.30	8.10	6.50	3.00
9	2.41	7.66	14.72	-------	6.60	4.08	12.00	8.10	10.95	6.80	7.00	2.94
10	2.04	7.01	13.44	-------	7.50	3.70	11.35	7.47	10.80	6.00	6.58	2.86
11	1.72	6.60	11.28	-------	7.95	3.62	9.90	6.92	11.30	5.77	6.50	2.78
12	1.97	6.66	9.53	-------	7.48	3.82	9.17	6.45	9.80	5.50	6.49	2.68
13	3.52	7.56	9.11	-------	6.45	4.70	8.90	6.04	8.40	5.55	6.20	2.60
14	5.22	7.66	11.34	-------	6.10	6.75	9.20	5.77	7.40	6.30	5.50	2.48
15	6.12	6.86	14.38	-------	9.90	11.30	9.60	5.40	6.77	6.62	4.90	2.40
16	5.34	6.21	13.16	-------	13.83	11.40	9.80	5.05	6.25	6.40	4.40	2.28
17	4.97	6.35	13.26	-------	11.50	9.40	9.45	4.83	5.86	6.10	4.25	2.20
18	6.81	12.86	13.04	6.30	9.80	7.70	8.45	4.80	5.60	5.47	4.08	2.14
19	14.67	17.91	-------	5.93	8.32	6.85	7.80	5.65	5.31	4.95	3.81	2.11
20	23.52	13.91	-------	5.90	7.12	6.30	7.25	7.75	5.70	4.80	3.64	2.24
21	23.12	11.06	-------	5.46	6.45	6.13	6.92	9.35	6.90	4.35	3.50	2.34
22	16.97	9.21	-------	4.93	5.70	6.00	8.40	9.45	7.65	4.14	3.61	2.30
23	12.67	8.33	-------	4.24	5.88	5.86	12.00	8.70	6.20	4.10	4.00	2.26
24	10.17	7.81	-------	4.20	9.10	7.00	15.65	8.75	8.35	5.30	4.55	2.19
25	8.52	8.01	-------	6.33	12.06	12.10	15.75	8.17	7.90	7.85	4.35	2.14
26	7.37	11.16	-------	7.08	10.90	15.68	13.50	7.10	8.25	7.45	4.20	2.19
27	6.55	11.74	-------	6.98	8.10	16.90	11.70	6.41	10.62	6.30	4.00	2.16
28	5.85	12.61	-------	6.84	6.60	17.19	11.25	5.95	10.30	6.90	3.87	2.13
29	5.31	15.41	-------	6.39	6.03	14.50	12.53	5.60	9.75	6.35	3.70	2.10
30	4.91	14.76	-------	6.02	-------	12.47	16.30	5.40	14.95	5.78	3.58	2.10
31	4.56	-------	-------	5.36	-------	12.11	-------	5.33	-------	5.80	3.63	-------

NOTE—Gage heights observed at Market Street Bridge until Dec. 18 and at North Street Bridge since Jan. 17. Stage-discharge relation at both gages affected by the construction of the new Market Street Bridge.

Daily discharge, in second-feet, of North Branch Susquehanna River at Wilkes-Barre, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,600	8,500	60,000	30,000	8,200	11,300	33,500	97,200	9,320	62,400	9,040	4,000
2	1,600	7,500	70,000	38,000	7,480	9,940	27,800	89,200	9,600	48,800	7,480	4,000
3	3,400	8,000	55,000	34,000	6,760	9,040	24,400	58,200	8,760	34,900	7,000	3,800
4	6,000	18,000	42,000	28,000	6,040	7,720	22,900	42,500	7,960	27,300	6,760	3,600
5	5,500	38,000	34,000	19,000	7,000	7,000	26,300	34,500	10,600	25,400	6,040	3,400
6	5,000	38,000	28,000	14,000	8,760	6,760	29,300	29,300	35,900	28,300	7,240	3,200
7	4,600	30,000	28,000	12,000	7,960	5,800	30,900	25,400	66,900	27,800	12,400	3,200
8	4,400	26,000	42,000	12,000	9,040	5,600	33,500	22,500	51,500	20,200	13,200	3,000
9	4,200	22,000	70,000	13,000	13,600	6,040	39,500	20,200	34,500	14,500	15,300	2,800
10	4,200	19,000	55,000	16,000	17,400	5,200	36,400	17,400	33,500	11,300	13,600	2,600
11	4,800	17,000	44,000	16,000	19,700	5,000	28,800	14,900	35,900	10,600	13,200	2,600
12	6,500	18,000	36,000	14,000	17,400	5,400	25,400	12,800	28,300	9,600	13,200	2,400
13	8,500	22,000	34,000	13,000	12,800	7,480	23,900	11,300	21,500	9,940	12,100	2,400
14	12,000	24,000	38,000	12,000	11,700	14,500	25,400	10,600	17,000	12,400	9,600	2,400
15	16,000	19,000	70,000	13,000	28,800	35,900	27,300	9,320	14,500	13,600	7,960	2,200
16	12,000	17,000	55,000	14,000	48,800	36,400	28,300	8,200	12,100	12,800	6,760	2,200
17	9,500	32,000	60,000	14,000	36,900	26,300	26,300	7,720	11,000	11,700	6,280	2,000
18	40,000	50,000	42,000	12,400	28,300	18,300	21,500	7,720	9,940	9,600	6,040	2,000
19	55,000	75,000	32,000	11,000	21,100	14,500	18,800	9,940	9,040	8,200	5,400	1,900
20	130,000	60,000	28,000	11,000	15,700	12,400	16,100	18,800	10,300	7,720	5,000	1,900
21	120,000	46,000	24,000	9,600	12,800	11,700	14,900	26,300	14,900	6,760	4,800	2,200
22	70,000	32,000	20,000	7,960	10,300	11,300	21,500	26,300	17,900	6,040	5,000	2,000
23	55,000	28,000	18,000	6,280	11,000	11,000	39,500	22,900	12,100	6,040	5,800	2,000
24	46,000	22,000	16,000	6,280	24,900	15,300	59,600	23,400	21,500	9,040	7,240	2,000
25	36,000	24,000	14,000	12,400	40,000	40,000	60,900	20,600	19,200	18,800	6,000	2,000
26	28,000	40,000	13,000	15,700	34,000	60,200	47,200	15,700	20,600	17,000	5,500	2,000
27	22,000	42,000	12,000	15,300	20,200	69,200	37,900	12,800	32,500	12,400	5,000	2,000
28	16,000	46,000	11,000	14,500	13,600	71,600	35,400	11,300	30,900	14,900	4,400	2,000
29	13,000	70,000	11,000	12,800	11,300	52,600	42,000	9,940	28,300	12,800	4,000	1,900
30	11,000	65,000	12,000	11,300	-------	42,000	64,600	9,320	55,600	10,600	3,800	1,900
31	9,500	-------	19,000	9,320	-------	40,000	-------	9,040	-------	10,600	4,000	-------

NOTE—Discharge estimated, because of the construction of new Market Street Bridge, from three discharge measurements and discharge of North Branch Susquehanna River at Towanda and Danville.

Monthly discharge of North Branch Susquehanna River at Wilkes-Barre, for the year ending Sept. 30, 1928

(Drainage area 9,960 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	130,000	1,600	24,600	2.47	2.85
November	75,000	7,500	32,100	3.22	3.59
December	70,000	11,000	35,300	3.54	4.08
January	38,000	6,280	15,100	1.52	1.75
February	48,800	6,040	17,600	1.77	1.91
March	71,600	5,000	21,800	2.19	2.52
April	64,600	14,900	32,300	3.24	3.62
May	97,200	7,720	23,700	2.38	2.74
June	66,900	7,960	23,100	2.32	2.59
July	62,400	6,040	17,200	1.73	1.99
August	15,300	3,800	7,710	1.73	1.99
September	4,000	1,900	2,520	.253	.28
The Year	130,000	1,600	21,100	2.12	28.81

SUQUEHANNA BASIN—STATION NO. 8

WAPWALLOPEN CREEK NEAR WAPWALLOPEN

Location.—At single-span steel highway bridge, known as Harts Bridge, three and one-half miles southeast of Wapwallopen, Luzerne County, and three and one-half miles upstream from mouth of creek.

Drainage Area.—46 square miles.

Records Available.—October 24, 1919, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Calvin P. Readler.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Left bank is high and not subject to overflow; right is of medium height and becomes inundated during extremely high stages. Bed is composed of gravel and boulders. Control is at a riffle about 1,000 feet downstream from the gage, where bed is composed of a compact formation of coarse gravel and boulders; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.30 feet at 11 a. m. October 19 (discharge, 1,390 second-feet); minimum, 0.82 foot on October 1 (discharge, 4.0 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—The operation of grist mills upstream from the station may cause variation in stage during low flows. There is very little storage at the mill dam one and one-half miles upstream from the gage; at the dam three and one-half miles upstream from the gage there is some storage and flow during part of day, at time of low water, can probably be stored.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined between 4 and 300 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extremely high stages, when they are fair.

Discharge measurements of Wapwallopen Creek near Wapwallopen during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
23	May 8	R. P. Mason	2.12	117
24	8	do	2.12	116

Daily Mean Gage Height, in feet, of Wapwallopen Creek near Wapwallopen, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.82	1.66	1.86	1.81	2.29	1.77	2.51	3.35	1.51	3.42	1.53	1.23
2	0.86	1.62	2.17	1.99	2.19	1.73	2.29	2.88	1.50	2.94	1.45	1.19
3	1.04	1.73	2.82	2.05	2.15	1.72	2.13	2.82	1.45	2.57	1.50	1.45
4	2.74	1.87	2.35	2.07	2.18	1.77	1.98	2.53	1.79	2.39	1.47	1.43
5	1.60	1.84	2.31	2.15	2.79	1.80	1.99	2.30	2.62	2.78	1.45	1.26
6	1.34	1.82	2.20	2.15	2.20	1.79	1.89	2.72	2.98	3.30	1.88	1.31
7	1.31	1.52	2.25	2.19	2.27	1.68	1.75	2.56	2.86	2.59	1.57	1.28
8	1.41	1.47	3.55	2.10	2.77	1.79	2.93	2.18	2.56	2.30	1.47	1.26
9	1.37	1.42	2.78	1.94	2.80	1.72	2.28	2.03	2.68	2.09	1.41	1.19
10	1.34	1.47	2.50	1.67	2.35	2.02	2.15	1.91	2.61	2.00	1.42	1.14
11	1.30	1.66	2.28	1.60	2.19	1.74	2.07	1.81	2.21	2.08	1.66	1.09
12	1.60	1.65	2.48	1.55	2.29	1.57	2.70	1.76	2.07	2.25	1.40	1.08
13	3.50	1.61	2.54	1.54	1.88	1.64	2.35	1.68	1.96	2.18	1.33	1.04
14	2.41	1.57	3.04	1.47	2.40	1.81	2.30	1.62	1.93	2.07	1.29	.96
15	2.10	1.49	2.52	1.48	2.95	1.81	2.58	1.58	2.13	1.99	1.29	1.06
16	1.93	1.47	2.42	1.42	2.22	1.67	2.32	1.57	1.92	1.92	1.25	1.06
17	2.30	2.37	2.74	1.41	2.14	1.70	2.29	1.57	1.69	1.81	1.25	1.03
18	3.90	4.06	2.62	1.41	1.99	1.95	2.25	2.00	1.59	1.71	1.25	.99
19	5.85	2.92	2.46	1.43	1.81	1.70	2.16	2.39	1.75	1.65	1.21	1.13
20	4.35	2.70	2.20	1.82	1.99	1.49	1.97	2.22	1.82	1.76	1.17	1.17
21	3.75	2.45	2.03	1.68	1.89	1.56	2.35	1.93	1.72	1.83	1.15	1.12
22	3.19	2.32	1.96	1.64	1.85	1.65	2.74	1.92	1.90	2.80	1.21	1.03
23	2.80	2.23	1.87	1.65	2.62	1.82	2.77	2.08	1.78	3.80	1.16	.96
24	2.57	2.16	1.80	1.77	2.70	1.98	2.86	1.83	1.75	2.69	1.11	.97
25	2.31	2.07	2.04	2.51	2.17	2.38	2.57	1.76	2.10	2.42	1.16	.95
26	2.02	2.01	1.85	2.00	2.25	2.31	2.40	1.69	2.67	2.15	1.24	1.04
27	1.97	1.97	1.78	1.95	2.12	2.20	2.60	1.65	2.96	2.14	1.24	1.01
28	1.91	2.07	1.67	2.46	1.97	1.98	3.60	1.66	2.43	2.14	1.24	.97
29	1.88	2.16	1.80	2.40	1.85	1.95	3.85	1.63	3.62	1.90	1.19	.91
30	1.78	2.01	1.89	2.16	-------	3.20	3.95	1.64	4.70	1.76	1.23	1.25
31	1.72	-------	1.84	2.34	-------	2.94	-------	1.59	-------	1.63	1.29	-------

NOTE.—Stage-discharge relation Jan. 2-9, 20-23, Jan. 27 to Feb. 13, Feb. 17-21, 26,27, Mar. 4-11 and 17-19 affected by ice.

Daily discharge, in second-feet, of Wapwallopen Creek near Wapwallopen for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.0	56	78	72	40	68	167	350	42	350	44	20
2	4.8	52	115	70	40	63	136	240	41	250	36	17
3	10	63	221	70	46	62	115	221	36	176	41	36
4	212	79	144	70	70	55	93	176	70	151	38	35
5	50	76	136	70	120	50	94	136	184	221	36	22
6	27	73	122	70	70	48	82	202	260	325	81	25
7	25	43	129	60	75	44	66	176	230	184	47	23
8	33	38	400	70	150	42	250	122	176	136	38	22
9	30	34	221	75	140	38	136	102	202	108	33	17
10	27	38	167	57	100	36	115	84	184	95	34	15
11	24	56	136	50	70	40	102	72	122	108	56	12
12	50	55	167	46	60	47	202	67	102	129	32	12
13	375	51	176	45	60	54	144	58	90	122	26	10
14	151	47	260	38	151	72	136	52	87	102	23	7.3
15	108	40	167	39	250	72	184	48	115	94	23	11
16	87	38	151	34	122	57	136	47	85	85	21	11
17	136	144	212	33	85	50	136	47	59	72	21	9.6
18	480	540	184	33	70	40	129	95	49	61	21	8.1
19	1,160	240	159	35	60	36	115	151	66	55	19	14
20	635	202	122	40	55	40	91	122	73	67	16	16
21	450	159	102	46	60	46	144	87	62	75	15	14
22	300	136	90	36	77	55	212	85	83	221	19	9.6
23	221	129	79	40	184	73	212	108	69	450	16	7.3
24	176	115	71	68	202	93	230	75	66	202	13	7.6
25	136	102	102	167	115	151	176	67	108	151	16	7.0
26	95	95	77	95	95	136	151	59	193	115	20	10
27	91	91	69	60	85	122	184	55	250	115	20	8.8
28	84	102	57	60	91	93	400	56	159	115	20	7.6
29	81	115	71	60	77	89	450	53	400	83	17	5.9
30	69	95	82	50	-------	300	510	54	740	67	20	21
31	62	-------	76	46	-------	250	-------	49	-------	53	23	-------

NOTE—Discharge Jan. 2-9, 20-23, Jan. 27 to Feb. 13, 17-21, 26, 27, Mar. 4-11 and 17-19 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Lackawanna River at Moosic, Fishing Creek at Bloomsburg and Little Schuylkill River at Tamaqua.

Monthly discharge of Wapwallopen Creek near Wapwallopen, for the year ending Sept. 30, 1928

(Drainage area 46 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,160	4.0	174	3.78	4.36
November	540	34	103	2.24	2.50
December	400	57	140	3.04	3.50
January	167	33	58.2	1.27	1.46
February	250	40	97.2	2.11	2.28
March	300	36	78.1	1.70	1.96
April	450	66	177	3.85	4.30
May	350	47	107	2.33	2.69
June	740	36	147	3.20	3.57
July	450	53	146	3.17	3.66
August	81	13	28.5	.620	.71
September	36	5.9	14.7	.320	.36
The Year	1,160	4.0	106	2.30	31.35

SUSQUEHANNA BASIN—STATION NO. 9

FISHING CREEK AT BLOOMSBURG

Location.—At single-span covered wooden highway bridge, known as Red Rock Bridge, Bloomsburg, Columbia County.

Drainage Area.—355 square miles.

Records Available.—January 27, 1914, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by L. Norman Cox. Elevation of gage zero 462.56 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of sand and gravel. Control is at a riffle, where the bed is composed of gravel, about 700 feet downstream from the gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 14.00 feet at 2 a. m. July 6 (discharge, about 16,900 second-feet); minimum, 2.59 feet at 5.30 p. m. September 15 (discharge, 61 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,200 second-feet and fairly well defined between 1,200 and 2,600 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages, when they are fair.

Discharge measurements of Fishing Creek at Bloomsburg during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
32	Apr. 3	J. M. Snavely	4.78	1,050
33	3	do	4.75	1,050
34	13	W. B. McMorris	4.55	922
35	13	J. M. Snavely	4.53	886
36	May 8	Geo. Weber	4.14	698
37	11	J. M. Snavely	3.77	480
38	11	do	3.75	469
39	Aug. 16	do	2.94	163
40	16	do	2.94	162

Measurements made from concrete highway bridge about 4,000 feet downstream from gage.

Daily Mean Gage Height, in feet, of Fishing Creek at Bloomsburg, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.72	3.46	5.25	4.75	3.50	3.91	5.85	7.06	3.32	7.17	3.70	3.88
2	2.68	3.39	5.02	4.12	3.44	3.66	5.10	6.35	3.34	5.66	3.75	3.61
3	2.80	3.48	5.80	4.06	3.41	3.62	4.80	5.55	3.34	4.97	3.45	3.58
4	3.40	3.80	5.32	3.98	3.50	3.35	4.60	5.12	3.43	4.68	3.27	3.60
5	3.40	3.79	5.10	3.95	4.58	3.49	4.55	4.81	4.80	7.12	3.22	3.31
6	3.14	3.70	4.94	3.89	3.90	3.25	4.52	4.60	6.45	11.14	4.12	3.21
7	3.08	3.59	4.90	3.82	3.67	3.25	4.60	4.35	6.30	7.07	3.55	3.15
8	3.08	3.49	7.79	3.88	4.78	3.15	5.80	4.18	5.25	5.72	3.36	3.04
9	2.96	3.42	7.20	3.98	4.75	3.16	5.40	4.06	5.10	5.22	3.32	3.02
10	2.90	3.40	6.07	3.91	4.15	3.12	4.95	3.94	5.40	5.47	3.25	2.93
11	2.88	3.36	5.35	3.71	3.84	3.18	4.58	3.83	4.88	5.38	3.26	2.88
12	2.95	3.38	5.30	3.68	3.60	3.28	4.88	3.72	4.55	7.26	3.19	2.82
13	5.32	3.39	5.52	3.62	3.49	3.69	4.62	3.59	4.30	5.86	3.08	2.76
14	4.59	3.29	7.35	3.68	4.48	4.55	4.83	3.53	4.16	8.80	2.97	2.77
15	3.98	3.31	6.75	3.63	6.90	4.40	6.73	3.46	3.98	6.62	2.89	2.68
16	3.69	3.24	6.50	3.49	5.08	3.99	5.85	3.41	3.75	5.77	2.91	2.66
17	4.11	3.35	7.02	3.49	4.65	3.88	5.22	3.36	3.54	5.07	2.91	2.71
18	5.75	8.47	6.25	3.54	4.42	3.80	4.90	3.36	3.49	4.62	2.90	2.68
19	8.31	6.98	5.50	3.45	3.90	3.72	4.59	4.10	3.60	4.32	2.93	2.75
20	8.90	5.55	5.18	4.04	3.90	3.69	4.35	4.20	3.52	4.19	2.76	2.75
21	7.32	5.15	4.75	3.60	3.58	3.55	4.28	4.02	3.46	3.99	2.80	2.74
22	5.90	4.90	4.50	3.56	3.51	3.72	5.00	3.79	3.86	4.27	2.94	2.74
23	5.18	4.46	4.25	3.61	4.81	3.95	6.60	3.72	3.73	7.51	2.94	2.69
24	4.70	4.52	4.08	3.75	5.92	5.32	7.12	3.61	3.59	5.55	2.77	2.69
25	4.41	4.39	3.74	5.35	4.80	5.92	6.35	3.52	3.62	4.62	2.86	2.67
26	4.15	4.25	3.62	4.51	4.50	5.90	5.55	3.44	4.15	4.16	3.17	2.68
27	4.02	4.50	3.69	3.81	4.29	6.00	5.20	3.40	5.62	3.95	2.98	2.64
28	3.83	5.00	3.54	3.85	3.92	5.28	7.88	3.39	5.10	4.22	3.04	2.73
29	3.66	5.52	3.62	3.72	3.78	4.81	7.85	3.41	6.55	3.91	3.04	2.68
30	3.56	5.42	3.87	3.56	-------	6.95	7.55	3.36	9.05	3.63	2.99	2.65
31	3.55	-------	3.98	3.48	-------	6.95	-------	3.50	-------	3.54	3.96	-------

NOTE—Stage-discharge relation Jan. 28 to Feb. 2 and Feb. 20 affected by ice.

Daily discharge, in second-feet, of Fishing Creek at Bloomsburg, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	88	338	1,360	1,070	300	544	1,850	3,180	277	3,300	446	544
2	79	317	1,200	649	300	423	1,280	2,420	297	1,760	470	400
3	107	358	1,850	622	317	400	1,070	1,680	297	1,200	338	400
4	317	494	1,440	596	358	297	945	1,280	338	1,010	258	400
5	317	494	1,280	570	945	358	945	1,070	1,070	3,180	239	277
6	220	446	1,130	544	544	258	885	945	2,420	9,830	649	239
7	202	400	1,130	494	422	258	945	791	2,320	3,180	397	220
8	202	358	4,080	544	1,070	220	1,850	703	1,360	1,760	297	184
9	154	317	3,300	596	1,070	220	1,510	622	1,280	1,360	277	167
10	135	317	2,120	544	676	202	1,200	570	1,510	1,600	258	145
11	129	297	1,510	446	519	239	945	519	1,130	1,510	258	129
12	151	317	1,440	446	400	277	1,130	446	945	3,430	239	113
13	1,440	317	1,600	400	358	446	945	400	760	1,930	202	97
14	945	277	3,550	446	885	945	1,070	397	676	5,540	157	100
15	596	277	2,840	423	2,950	822	2,730	338	596	2,620	132	79
16	446	258	2,520	358	1,280	596	1,850	317	470	1,850	138	75
17	649	297	3,060	358	945	544	1,360	297	397	1,280	138	85
18	1,850	5,080	2,210	397	822	494	1,130	297	358	945	135	79
19	4,780	3,060	1,600	338	544	446	945	649	400	760	145	95
20	5,700	1,680	1,360	622	440	446	791	703	358	703	97	95
21	3,430	1,360	1,070	400	400	397	760	596	338	596	107	93
22	1,930	1,130	885	397	358	446	1,200	494	519	732	148	93
23	1,360	854	732	400	1,070	570	2,620	446	470	3,680	148	81
24	1,010	885	649	470	1,930	1,440	3,180	400	400	1,680	100	81
25	822	822	470	1,510	1,070	1,930	2,420	358	400	945	124	77
26	676	732	400	885	885	1,930	1,680	338	676	676	220	79
27	596	885	446	494	760	2,040	1,360	317	1,680	570	161	71
28	519	1,200	397	400	544	1,440	4,230	317	1,280	703	184	90
29	423	1,600	400	340	494	1,070	4,080	317	2,620	544	184	79
30	397	1,510	519	300	-------	3,060	3,820	297	5,870	423	164	73
31	397	-------	596	300	-------	3,060	-------	358	-------	397	570	-------

NOTE—Discharge Jan. 28 to Feb. 2 and Feb. 20 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Towanda Creek near Monroeton, Lackawanna River at Moosic and Loyalsock Creek at Loyalsock.

Monthly discharge of Fishing Creek at Bloomsburg, for the year ending Sept. 30, 1928

(Drainage area 255 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	5,700	79	970	2.73	3.15
November	5,080	258	889	2.50	2.79
December	4,080	397	1,520	4.28	4.93
January	1,510	300	528	1.49	1.72
February	2,950	300	781	2.20	2.37
March	3,060	202	833	2.35	2.71
April	4,230	760	1,690	4.76	5.31
May	3,180	297	705	1.99	2.29
June	5,870	277	1,050	2.96	3.30
July	9,830	397	1,930	5.44	6.27
August	649	97	238	.670	.77
September	544	71	158	.445	.50
The Year	9,830	71	942	2.65	36.11

SUSQUEHANNA BASIN—STATION NO. 10

NORTH BRANCH SUSQUEHANNA RIVER AT DANVILLE

Location.—At seven-span steel highway bridge between South Danville and Danville, Montour County.

Drainage Area.—11,200 square miles.

Records Available.—March 25, 1899, to December 31, 1903, and March 23, 1905, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by E. F. Bell. Elevation of gage zero 430.47 feet. United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Left bank is high and not subject to overflow; right bank subject to overflow at extremely high stages. Bed is composed of gravel and rock. Control is at a riffle a short distance downstream from the gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, 19.90 feet observed at 7 a. m. October 21 (discharge, 156,000 second-feet); minimum, 2.30 feet on October 2 (discharge 2,030 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 800 and 150,000 second-feet. Gage read to half-tenths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Daily Mean Gage Height, in feet, of North Branch Susquehanna River at Danville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.35	4.65	12.10	7.35	3.95	5.15	9.65	14.70	4.45	13.80	4.78	3.38
2	2.30	4.48	12.00	9.25	4.00	4.95	8.45	15.80	4.40	12.40	4.48	3.28
3	2.35	4.35	13.05	9.30	3.80	4.70	7.65	13.40	4.40	10.15	4.15	3.30
4	3.30	4.70	10.95	8.15	3.65	4.35	7.20	11.05	4.25	8.32	3.90	3.40
5	3.78	7.95	9.75	7.10	4.25	4.15	7.15	9.50	4.55	7.60	3.90	3.32
6	3.40	9.65	8.75	6.00	4.40	4.00	7.85	8.60	6.50	10.00	4.20	3.18
7	3.05	9.35	8.20	5.45	4.20	3.90	8.10	7.85	12.90	8.90	4.55	3.05
8	3.25	8.30	9.65	5.25	4.45	3.75	8.45	7.20	12.20	7.70	5.05	3.02
9	3.45	7.32	12.90	5.58	5.40	3.70	9.30	6.80	9.75	6.45	5.60	2.95
10	3.25	6.65	12.70	5.75	5.85	3.70	9.80	6.35	8.60	5.70	5.50	2.95
11	3.10	6.25	10.90	5.80	6.15	3.65	8.50	5.90	9.10	5.65	5.15	2.90
12	3.00	6.00	9.45	5.70	6.25	3.55	7.80	5.50	8.65	6.05	5.20	2.85
13	4.65	6.60	8.52	5.45	5.80	3.70	7.45	5.15	7.35	5.20	5.20	2.80
14	5.75	7.10	9.55	5.28	5.10	4.35	7.45	4.90	6.40	6.15	4.90	2.75
15	5.50	6.65	11.92	5.15	6.75	6.20	8.40	4.65	5.85	6.95	4.38	2.68
16	5.98	6.12	12.20	5.25	10.55	9.20	8.20	4.45	5.45	5.90	4.00	2.62
17	5.48	6.10	11.85	5.35	10.30	8.25	8.20	4.30	5.20	5.50	3.78	2.58
18	6.10	9.50	12.20	5.32	8.55	6.95	7.50	4.15	4.90	5.20	3.60	2.55
19	11.35	14.35	10.55	5.00	7.25	6.00	6.75	4.35	4.65	4.65	3.50	2.62
20	17.95	13.60	9.15	4.90	6.25	5.35	6.35	4.80	4.60	4.42	3.32	2.55
21	19.60	10.85	7.85	4.95	5.75	5.10	5.80	5.55	4.80	4.30	3.28	2.58
22	16.30	9.20	7.40	4.65	5.10	5.00	5.95	7.60	5.95	4.05	3.22	2.58
23	12.25	8.10	7.00	4.00	4.95	4.95	7.75	7.05	6.25	5.50	3.25	2.58
24	9.90	7.50	6.60	3.70	6.35	5.40	11.35	6.85	5.90	4.50	3.52	2.55
25	8.50	7.25	6.25	4.40	9.15	7.45	12.75	7.05	6.70	4.75	3.88	2.62
26	7.38	8.75	6.00	5.65	8.95	11.55	10.65	6.05	6.65	6.45	3.72	2.58
27	6.62	9.40	5.60	5.15	7.55	12.95	9.90	5.45	8.55	5.78	3.60	2.65
28	6.02	9.85	5.05	4.85	6.25	13.40	10.10	5.10	9.00	5.45	3.52	2.58
29	5.55	12.55	5.20	4.70	5.40	12.45	10.45	4.80	8.60	5.30	3.42	2.58
30	5.15	13.10	5.22	4.55	-------	11.00	12.25	4.55	11.65	4.72	3.35	2.55
31	4.95	-------	5.35	4.10	-------	10.85	-------	4.45	-------	4.95	3.38	-------

NOTE—Stage-discharge relation Jan. 21-23 and Feb. 2 and 3 affected by ice.

Daily discharge, in second-feet, of North Branch Susquehanna River at Danville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,150	10,700	64,500	26,200	7,870	13,600	42,500	91,900	9,730	81,900	11,600	5,380
2	2,030	10,200	63,600	39,200	7,000	12,600	33,200	105,000	9,730	67,400	10,200	5,000
3	2,150	9,730	73,500	40,000	6,000	11,200	27,500	77,700	9,730	47,500	8,780	5,000
4	5,000	11,200	54,500	31,700	6,170	9,730	24,900	54,500	8,780	32,500	7,430	5,380
5	7,000	30,300	44,100	24,200	8,780	8,780	24,900	41,700	10,700	27,500	7,430	5,000
6	5,380	42,500	36,100	17,800	9,730	7,870	28,900	34,600	20,600	45,800	8,780	4,640
7	3,980	40,800	31,700	14,600	8,780	7,430	31,000	28,900	72,500	36,900	10,700	3,980
8	4,640	32,500	42,500	13,600	9,730	7,000	33,200	24,900	65,500	28,200	12,600	3,980
9	5,380	25,500	72,500	15,600	14,600	6,580	40,000	22,400	44,100	20,000	15,600	3,820
10	4,640	21,200	70,400	16,700	16,700	6,580	44,100	20,000	34,600	16,100	15,100	3,820
11	4,300	18,900	53,600	16,700	18,900	6,170	33,900	17,200	38,400	15,600	13,600	3,670
12	3,980	17,800	40,800	16,100	18,900	6,170	28,900	15,100	34,600	17,800	13,600	3,520
13	10,700	21,200	33,900	14,600	16,700	6,580	26,200	13,600	26,200	13,600	13,600	3,370
14	16,700	24,200	42,500	14,100	13,100	9,730	26,200	12,100	20,000	18,900	12,100	3,220
15	15,100	21,200	62,600	13,600	22,400	18,900	33,200	10,700	16,700	23,600	9,730	3,080
16	17,800	18,300	65,500	13,600	51,000	39,200	31,700	9,730	14,600	17,200	7,870	2,800
17	15,100	18,300	61,700	14,600	48,400	31,700	31,700	9,250	13,600	15,100	7,000	2,800
18	18,300	41,700	65,500	14,100	34,600	23,600	26,900	8,780	12,100	13,600	6,170	2,660
19	58,100	88,500	51,000	12,600	24,900	17,800	22,400	9,730	10,700	10,700	5,770	2,800
20	131,000	79,800	39,200	12,100	18,900	14,600	20,000	11,600	10,700	9,730	5,000	2,660
21	152,000	52,700	28,900	10,000	16,700	13,100	16,700	15,600	11,600	9,250	5,000	2,800
22	110,000	39,200	26,200	9,000	13,100	12,600	17,800	27,500	17,800	7,870	4,640	2,800
23	65,500	31,000	23,600	7,500	12,600	12,600	28,900	23,600	18,900	15,100	4,640	2,800
24	45,000	26,900	21,200	6,580	20,000	14,600	58,100	22,400	17,200	10,200	5,770	2,660
25	33,900	24,900	18,900	9,730	39,200	26,200	71,500	23,600	21,800	11,600	7,430	2,800
26	26,200	36,100	17,800	15,600	37,700	59,900	51,000	17,800	21,200	20,000	6,580	2,800
27	21,200	40,800	15,600	13,600	27,500	73,500	45,000	14,600	34,600	16,700	6,170	2,940
28	17,800	44,100	12,600	11,600	18,900	77,700	46,600	13,100	37,700	14,600	5,770	2,800
29	15,600	69,400	13,600	11,200	14,600	67,400	49,200	11,600	34,600	14,100	5,380	2,800
30	13,600	74,600	13,600	10,700	-------	54,500	65,500	10,700	59,900	11,200	5,380	2,660
31	12,600	-------	14,600	8,320	-------	52,700	-------	9,730	-------	12,600	5,380	-------

NOTE—Discharge Jan. 21-23 and Feb. 2 and 3 estimated, because of ice, from weather records, study of gage height graph and discharge of North Branch Susquehanna River at Towanda, West Branch Susquehanna River at Williamsport and Susquehanna River at Sunbury.

Monthly discharge of North Branch Susquehanna River at Danville, for the year ending Sept. 30, 1928

(Drainage area 11,200 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	152,000	2,030	27,300	2.44	2.81
November	88,500	9,730	34,100	3.04	3.39
December	73,500	12,600	41,200	3.68	4.24
January	40,000	6,580	16,000	1.43	1.65
February	51,000	6,000	19,400	1.73	1.87
March	77,700	6,170	23,600	2.11	2.43
April	71,500	16,700	35,400	3.16	3.53
May	105,000	8,780	26,100	2.33	2.69
June	72,500	9,730	25,300	2.26	2.52
July	81,900	7,870	22,700	2.03	2.34
August	15,600	4,640	8,540	.762	.88
September	5,380	2,660	3,480	.311	.35
The Year	152,000	2,030	23,600	2.11	28.70

SUSQUEHANNA BASIN—STATION NO. 11

WEST BRANCH SUSQUEHANNA RIVER AT BOWER

Location.—At single-span steel highway bridge about four miles northeast of Mahaffey, near railroad station at Bower, Clearfield County.

Drainage Area.—320 square miles.

Records Available.—October 2, 1913, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by A. T. Bell. Elevation of gage zero 1,207.22 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is low and subject to overflow at extremely high stages; left is high and not subject to overflow. Bed is composed of gravel. Control is at riffle about 200 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 11.80 feet at noon March 30 (discharge, 9,570 second-feet); minimum 4.03 feet at 7.30 a. m. October 1 and 3 (discharge, 49 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 20 and 4,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages, when they are fair.

Discharge measurements of West Branch Susquehanna River at Bower during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
34	Oct. 7a	Geo. Weber	4.56	119
35	Aug. 28a	J. M. Snavely	4.38	85.4

a Measurement made by wading 600 feet upstream from gage.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Bower, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.04	4.92	7.60	6.67	6.42	6.17	7.92	9.69	4.83	6.36	7.25	4.95
2	4.06	4.89	6.90	5.58	5.98	5.76	7.23	8.19	4.91	6.01	7.40	4.68
3	4.29	6.50	6.64	5.92	5.84	5.72	6.75	7.17	4.85	6.16	6.07	4.56
4	6.09	8.02	6.25	6.20	5.62	5.72	7.04	6.69	5.76	5.75	5.78	4.48
5	5.14	7.46	6.04	7.45	8.16	5.74	6.58	6.27	8.56	6.94	5.44	4.46
6	4.72	7.06	5.90	7.58	7.55	5.58	6.35	5.97	9.24	7.18	5.44	4.42
7	4.58	6.71	5.85	7.24	6.68	5.46	6.59	5.77	8.08	6.36	5.21	4.42
8	4.75	6.35	7.46	7.16	7.23	5.40	9.16	5.59	7.06	5.88	5.03	4.42
9	4.66	6.14	6.68	7.04	7.96	5.57	7.77	5.45	7.93	5.60	4.94	4.36
10	4.48	6.00	6.15	6.48	7.18	5.58	7.09	5.35	9.04	5.90	5.10	4.32
11	4.40	6.12	6.50	5.65	6.78	5.65	6.72	5.29	7.57	5.64	5.61	4.30
12	4.76	6.04	8.68	5.50	6.40	5.30	8.09	5.35	6.78	6.02	5.10	4.26
13	7.07	5.86	8.92	5.46	6.07	7.65	8.21	5.14	6.28	5.73	4.85	4.22
14	5.95	5.72	10.84	5.46	6.63	8.48	7.89	5.03	5.97	7.07	4.74	4.22
15	5.48	5.60	8.94	5.40	9.15	7.61	7.55	4.97	5.84	6.33	4.70	4.20
16	5.22	5.53	9.59	5.27	8.52	6.98	6.99	4.92	5.45	5.98	4.79	4.55
17	5.10	5.75	8.58	5.41	7.84	6.62	6.67	4.91	5.26	5.59	4.66	4.43
18	5.98	6.38	7.54	5.45	6.88	6.44	6.36	5.13	5.38	5.36	4.64	4.31
19	9.50	5.86	6.74	5.45	6.34	6.14	6.10	5.31	6.71	5.31	4.78	4.23
20	10.92	5.66	6.56	6.81	6.16	5.98	5.85	5.81	5.94	7.50	4.63	4.28
21	9.35	5.60	6.29	5.85	5.73	5.92	5.87	5.38	5.98	-------	4.50	4.60
22	7.60	5.60	6.04	5.90	5.74	6.70	7.47	5.21	7.16	-------	4.54	4.39
23	6.70	5.48	5.86	6.02	6.10	7.05	8.12	5.09	6.40	-------	4.50	4.29
24	6.26	-------	5.69	5.82	7.83	7.92	8.22	4.95	6.58	-------	4.48	4.22
25	5.84	5.86	5.50	6.55	7.12	8.07	7.74	4.91	6.76	6.20	4.56	4.20
26	5.60	5.70	5.42	6.07	6.50	7.92	7.39	4.88	6.43	5.80	4.62	4.26
27	5.42	6.54	5.44	5.72	6.30	7.66	6.85	4.94	6.08	5.66	4.48	4.24
28	5.28	8.80	5.32	5.64	6.10	6.92	6.92	5.07	5.82	5.46	4.40	4.22
29	5.20	9.40	5.54	5.42	6.00	6.62	7.32	4.97	6.34	5.32	4.36	4.19
30	5.08	8.50	6.40	5.58	-------	10.60	9.64	4.93	6.79	5.06	4.90	4.16
31	4.99	-------	6.42	6.29	-------	9.52	-------	5.06	-------	4.95	5.62	-------

NOTE—Gage height Nov. 24 and July 21-24 not observed. Stage-discharge relation Dec. 26, 27, Jan. 3-10, 17-19, 22-24 and Jan. 28 to Feb. 13 affected by ice.

Daily discharge, in second-feet, of West Branch Susquehanna River at Bower, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	190	2,060	1,180	300	762	2,400	5,170	178	900	1,640	205
2	51	190	1,360	445	320	522	1,640	2,770	190	670	1,840	145
3	78	1,010	1,090	280	340	495	1,260	1,640	178	762	700	118
4	730	2,520	830	320	400	495	1,450	1,180	522	522	550	107
5	265	1,950	700	420	1,100	522	1,090	830	3,350	1,360	378	104
6	145	1,540	610	440	950	445	900	640	4,320	1,640	378	98
7	125	1,180	580	360	650	378	1,090	522	2,640	900	280	98
8	155	900	1,950	340	850	355	4,320	445	1,540	610	235	98
9	135	762	1,180	380	1,100	422	2,280	378	2,400	445	205	89
10	107	670	762	440	1,100	445	1,540	335	3,980	610	250	83
11	95	730	1,010	470	850	470	1,180	315	2,060	470	445	80
12	155	700	3,500	400	700	865	2,640	335	1,260	670	250	74
13	1,540	580	3,820	378	650	2,060	2,770	265	865	522	178	68
14	640	495	7,270	378	1,090	3,200	2,400	235	640	1,540	155	68
15	400	445	3,820	355	4,320	2,060	2,060	205	580	900	145	65
16	280	422	5,000	298	3,200	1,450	1,450	190	378	670	165	118
17	250	522	3,350	280	2,280	1,090	1,180	190	298	445	135	100
18	670	935	1,950	280	1,360	972	900	265	355	335	135	82
19	4,830	580	1,180	280	900	762	730	315	1,180	315	165	70
20	7,480	470	1,090	1,260	762	670	580	550	640	1,950	135	77
21	4,660	445	865	580	522	610	580	355	670	1,000	110	125
22	2,060	445	700	400	522	1,180	1,950	280	1,640	750	118	94
23	1,180	400	580	550	730	1,450	2,640	250	935	1,700	110	78
24	830	480	495	500	2,280	2,400	2,770	205	1,090	1,100	107	68
25	580	580	400	1,090	1,540	2,640	2,170	190	1,260	795	118	65
26	445	495	340	700	1,010	2,400	1,840	190	972	550	125	74
27	355	1,010	320	495	865	2,170	1,260	205	730	470	107	71
28	315	3,660	315	400	730	1,360	1,360	235	550	378	95	68
29	280	4,660	422	320	670	1,090	1,740	205	900	315	89	64
30	250	3,200	935	300	-------	6,860	5,000	205	1,260	235	190	61
31	220	-------	935	280	-------	4,830	-------	235	-------	205	445	-------

NOTE—Discharge estimated Nov. 24 and July 21-24, because of no gage height record, and Dec. 26, 27, Jan. 3-10, 17-19, 22-24 and Jan. 28 to Feb. 13, because of ice, from weather records, study of gage height graph and comparison with similar studies for West Branch Susquehanna River at Renovo and Williamsport, Frankstown Branch Juniata River at Williamsburg and Blacklick Creek at Blacklick.

Monthly discharge of West Branch Susquehanna River at Bower, for the year ending Sept. 30, 1928

(Drainage area 320 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	7,480	50	947	2.96	3.41
November	4,660	190	1,070	3.34	3.73
December	7,270	315	1,590	4.97	5.73
January	1,260	280	471	1.47	1.70
February	4,320	300	1,110	3.47	3.74
March	6,860	355	1,470	4.59	5.29
April	5,000	580	1,840	5.75	6.42
May	5,170	190	624	1.95	2.25
June	4,320	178	1,250	3.91	4.36
July	1,950	205	766	2.39	2.76
August	1,840	89	322	1.01	1.16
September	205	61	90.5	.283	.32
The Year	7,480	50	961	3.00	40.87

SUSQUEHANNA BASIN—STATION NO. 12

CLEARFIELD CREEK AT DIMELING

Location.—At single-span steel highway bridge, Dimeling, Clearfield County, about 400 feet downstream from the mouth of Little Clearfield Creek.

Drainage Area.—370 square miles.

Records Available.—October 2, 1913, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by John Olson. Elevation of gage zero 1,145.56 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Left bank is high and not subject to overflow; right is low and is overflowed at extremely high stages. Bed at control riffle, about 250 feet downstream from the gage, is composed of coarse gravel and boulders; probably permanent.

Extremes of Discharge.—Maximum open-water stage during the year, estimated from hydrograph, 11.10 feet at 6 p. m. March 31 (discharge, 7,960 second-feet); a stage of 11.65 feet was observed at 7 a. m. February 9, but the water was held back by an ice jam; minimum 3.58 feet at 4 p. m. September 28 and 7 a. m. September 29 (discharge, 46 second-feet).

Ice.—Stage-discharge relation seriously affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge of Clearfield Creek at Dimeling during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
36	Oct. 9a	Geo. Weber	3.90	86.0
37	Aug. 28a	J. M. Snavely	4.08	121

a Measurement made by wading 200 feet upstream from gage.

Daily Mean Gage Height, in feet, of Clearfield Creek at Dimeling, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.61	4.67	7.00	6.40	9.00	5.75	8.08	10.15	4.41	6.68	6.80	4.12
2	3.62	4.57	6.46	7.82	8.95	5.60	7.12	8.50	4.47	6.20	6.52	3.98
3	3.72	6.10	6.28	8.39	8.90	5.30	6.72	7.38	4.36	6.12	5.48	4.10
4	4.70	7.65	5.85	9.70	9.25	5.30	6.75	6.82	4.95	6.05	5.47	3.92
5	4.65	7.70	5.71	9.70	10.32	5.20	6.42	6.20	7.60	6.88	5.00	3.91
6	4.15	7.08	5.56	9.70	10.80	5.08	6.18	5.77	8.56	7.20	4.92	3.82
7	3.95	6.60	5.80	9.70	10.80	5.01	6.07	5.55	7.68	6.30	4.78	3.85
8	3.88	6.18	6.55	9.20	10.95	5.00	9.15	5.42	6.65	5.72	4.62	3.86
9	3.83	5.84	6.28	8.90	8.77	5.05	7.98	5.28	6.48	5.50	4.55	3.85
10	3.83	5.74	5.95	8.85	6.59	5.20	7.10	5.12	8.04	6.15	4.60	3.87
11	3.79	5.64	6.06	8.65	6.18	5.62	6.65	5.28	7.02	5.90	5.25	3.78
12	3.95	5.52	6.85	8.48	6.05	5.82	7.18	5.12	6.38	6.20	4.90	3.75
13	5.76	5.48	7.95	6.44	5.95	6.50	7.15	4.92	5.98	5.85	4.60	3.68
14	5.35	5.31	9.26	5.13	5.72	7.65	7.27	4.65	5.62	6.64	4.36	3.70
15	4.80	5.20	8.15	4.91	7.20	8.15	7.00	4.55	5.42	6.32	4.30	3.68
16	4.54	5.13	8.15	4.82	7.35	7.52	6.70	4.58	5.18	5.78	4.31	3.68
17	4.50	5.20	8.00	4.75	6.37	6.50	6.42	4.59	4.92	5.42	4.20	3.64
18	5.70	5.52	7.05	4.70	6.20	6.25	6.12	4.64	4.92	5.05	4.16	3.60
19	9.41	5.35	6.32	5.40	5.98	6.10	5.90	4.74	6.03	5.05	4.18	3.65
20	10.50	5.15	5.95	6.30	5.65	5.82	5.60	5.14	5.80	6.08	4.24	3.65
21	9.22	5.08	5.99	6.23	5.28	5.52	5.63	5.05	6.38	6.30	4.15	3.85
22	7.30	5.07	5.78	7.90	5.05	5.97	7.30	4.92	8.38	5.37	4.06	3.98
23	6.42	5.02	5.55	6.62	5.35	6.65	8.26	4.68	6.95	6.15	4.02	3.85
24	5.98	5.10	5.38	5.70	6.25	6.97	8.20	4.49	6.72	5.68	3.93	3.70
25	5.60	5.42	4.85	5.95	6.48	7.80	7.80	4.45	6.72	5.35	4.26	3.68
26	5.32	5.35	4.85	8.59	5.90	7.95	7.18	4.45	6.48	4.98	4.52	3.64
27	5.09	5.90	5.08	10.66	5.46	7.52	6.78	4.52	6.20	4.92	4.19	3.59
28	4.89	7.35	7.31	10.95	5.48	6.85	6.70	4.55	5.85	4.85	4.00	3.62
29	4.84	8.15	5.77	10.25	5.55	6.93	7.40	4.58	6.90	4.72	3.88	3.59
30	4.80	7.52	5.43	9.15	-------	9.91	9.55	4.50	7.40	4.58	3.94	3.64
31	4.75	-------	5.72	9.00	-------	9.58	-------	4.46	-------	4.50	4.63	-------

NOTE—Stage-discharge relation Dec. 26-29, Jan. 1-13 and Jan. 22 to Feb. 10 affected by ice.

Daily discharge, in second-feet, of Clearfield Creek at Dimeling, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	268	1,700	440	260	760	2,920	6,180	195	1,420	1,520	129
2	51	235	1,260	340	280	675	1,800	3,440	208	1,040	1,260	105
3	64	980	1,120	340	360	515	1,420	2,100	184	980	620	129
4	285	2,320	820	400	700	515	1,520	1,520	372	915	592	95
5	268	2,440	730	480	1,200	470	1,180	1,040	2,320	1,600	390	93
6	140	1,800	648	460	1,000	430	1,040	760	3,580	1,900	355	78
7	100	1,340	790	380	700	390	980	648	2,440	1,120	320	83
8	88	1,040	1,340	360	750	390	4,440	565	1,340	730	250	85
9	80	820	1,120	380	1,200	410	2,800	515	1,260	620	235	83
10	80	760	882	400	1,100	470	1,800	430	2,800	1,040	250	86
11	74	702	980	460	1,040	675	1,340	515	1,700	850	492	72
12	100	620	1,520	500	915	790	1,900	430	1,180	1,040	355	68
13	760	620	2,800	550	882	1,260	1,900	355	915	820	250	58
14	540	515	4,600	450	730	2,320	2,000	268	675	1,340	184	61
15	320	470	3,040	355	1,900	3,040	1,700	235	565	1,120	172	58
16	235	450	3,040	320	2,100	2,220	1,420	250	470	790	172	58
17	220	470	2,800	302	1,180	1,260	1,180	250	355	565	150	53
18	730	620	1,700	285	1,040	1,040	980	268	355	410	140	48
19	4,760	540	1,120	565	915	980	850	302	915	410	150	54
20	6,750	450	882	1,120	702	790	675	450	790	980	161	54
21	4,440	430	915	1,040	515	620	702	410	1,180	1,120	140	83
22	2,000	410	790	440	410	882	2,000	355	3,300	540	119	105
23	1,180	390	648	550	540	1,340	3,180	285	1,700	1,040	109	83
24	915	430	565	480	1,040	1,700	3,040	220	1,420	730	96	61
25	675	565	338	600	1,260	2,560	2,560	208	1,420	540	161	58
26	515	540	300	900	850	2,800	1,900	208	1,260	390	220	53
27	430	850	300	900	592	2,220	1,520	220	1,040	355	150	47
28	355	2,100	340	550	620	1,520	1,420	235	820	338	109	51
29	338	3,040	440	440	648	1,600	2,100	250	1,600	285	88	47
30	320	2,220	592	340	-------	5,620	5,100	220	2,100	250	98	53
31	302	-------	730	280	-------	5,100	-------	208	-------	220	268	-------

NOTE—Discharge Dec. 26-29, Jan. 1-13 and Jan. 22 to Feb. 10 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for West Branch Susquehanna River at Bower and Raystown Branch Juniata River at Williamsburg.

Monthly discharge of Clearfield Creek at Dimeling, for the year ending Sept. 30, 1928

(Drainage area 370 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	6,750	49	876	2.37	2.73
November	3,040	235	948	2.56	2.86
December	4,600	260	1,250	3.38	3.90
January	1,120	280	497	1.34	1.54
February	2,100	260	877	2.37	2.56
March	5,620	390	1,460	3.95	4.55
April	5,100	675	1,910	5.16	5.76
May	6,180	208	753	2.04	2.35
June	3,580	184	1,280	3.46	3.86
July	1,900	220	823	2.22	2.56
August	1,520	88	309	.835	.96
September	129	47	73.0	.197	.22
The Year	6,750	47	921	2.49	33.85

SUSQUEHANNA BASIN—STATION NO. 13

DRIFTWOOD BRANCH SINNEMAHONING CREEK AT STERLING RUN

Location.—At three-span steel highway bridge, Sterling Run, Cameron County, about 300 feet upstream from mouth of Sterling Run.

Drainage Area.—270 square miles.

Records Available.—September 30, 1913, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by C. U. Lupro. Elevation of gage zero 894.60 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are low and subject to overflow during extremely high stages. Bed is composed of gravel. The control for low stages is at the first of a series of gravel riffles extending from 50 to 100 feet downstream from the gage; probably permanent. The control for medium and high stages, which was at the first of a series of riffles extending from 300 to 500 feet downstream from the gage, was changed on November 2, 1921, when a portion of the gravel bar, deposited by flow from Sterling Run on September 10, 1921, was washed away.

Extremes of Discharge.—Maximum stage during the year, 6.40 feet observed at 7 a. m. June 6 (discharge, 9,300 second-feet); minimum 0.55 foot at 3 p. m. October 1 and 2 (discharge, 18 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined between 20 and 10,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Driftwood Branch Sinnemahoning Creek at Sterling Run during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
51	Oct. 7a	Geo. Weber	0.71	25.7
52	7a	do	.71	26.5
53	Aug. 29b	J. M. Snavely	.88	69.8
54	29b	do	.88	70.4

a Measurement made by wading 200 feet downstream from gage.
b Measurement made by wading 500 feet downstream from gage.

Daily Mean Gage Height, in feet, of Driftwood Branch Sinnemahoning Creek at Sterling Run, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.56	0.80	3.40	2.38	1.28	1.32	2.72	2.68	1.07	1.65	1.00	1.01
2	.56	.82	3.06	2.42	1.20	1.22	2.30	2.42	1.02	1.53	.99	.91
3	.58	1.37	2.54	2.15	1.20	1.22	2.14	2.26	1.02	1.42	.98	.90
4	1.28	2.25	2.15	2.02	1.21	1.16	2.50	2.08	1.20	1.65	.96	.89
5	.86	2.15	1.88	1.82	1.58	1.22	2.44	1.81	4.15	1.95	.92	.88
6	.76	1.86	1.78	1.69	1.46	1.20	2.46	1.68	6.12	2.93	1.14	.87
7	.72	1.70	1.69	1.62	1.42	1.17	2.45	1.63	4.25	2.70	1.20	.87
8	.72	1.52	2.14	1.51	1.48	1.14	4.49	1.48	3.08	2.15	1.00	.86
9	.72	1.44	2.28	1.46	1.56	1.18	3.46	1.40	2.69	1.88	1.14	.86
10	.71	1.38	2.24	1.40	1.46	1.28	2.76	1.33	2.55	2.27	1.00	.84
11	.68	1.45	2.01	1.34	1.43	1.30	2.32	1.32	2.34	1.95	1.07	.84
12	.77	1.83	2.21	1.29	1.50	1.42	2.56	1.25	2.14	1.79	1.02	.84
13	1.63	1.78	2.65	1.28	1.69	2.00	2.64	1.19	1.88	1.58	.96	.82
14	1.10	1.62	4.50	1.42	1.60	2.92	2.74	1.12	1.71	1.58	.93	.81
15	.96	1.53	3.61	1.38	2.70	2.61	3.02	1.10	1.70	1.40	.90	.81
16	.86	1.43	4.45	1.34	2.50	2.23	2.74	1.08	1.48	1.28	1.08	.90
17	.82	1.52	4.75	1.34	2.18	1.98	2.34	1.06	1.37	1.18	.96	.88
18	.87	2.87	3.35	1.40	1.91	1.88	2.09	1.30	1.32	1.09	.91	.88
19	1.10	2.50	2.61	1.45	1.70	1.74	1.94	1.28	1.60	1.11	.90	.86
20	1.54	2.14	2.26	2.27	1.60	1.60	1.78	1.43	1.38	1.21	.88	.88
21	1.46	1.88	2.00	2.02	1.48	1.50	1.67	1.36	1.41	1.09	.95	.90
22	1.24	1.76	1.84	1.93	1.40	1.72	2.40	1.31	1.96	1.36	1.45	.89
23	1.11	1.64	1.75	1.85	1.44	1.83	3.11	1.26	1.96	2.14	1.16	.84
24	1.02	1.70	1.54	1.72	1.93	2.24	3.04	1.22	2.08	1.85	1.03	.84
25	.96	2.18	1.29	1.67	1.86	2.95	2.69	1.20	2.10	1.56	1.04	.82
26	.92	2.11	1.31	1.52	1.45	3.29	2.32	1.17	2.12	1.44	1.01	.82
27	.88	3.20	1.34	1.27	1.55	3.76	2.08	1.21	1.98	1.26	.95	.82
28	.86	4.08	1.30	1.36	1.45	3.16	2.10	1.16	1.81	1.20	.92	.83
29	.85	4.08	1.38	1.26	1.44	2.65	2.02	1.23	1.76	1.14	.90	.82
30	.84	3.62	1.74	1.24	-------	3.00	2.70	1.14	1.72	1.04	.88	.81
31	.81	-------	2.04	1.26	-------	3.16	-------	1.11	-------	1.00	1.14	-------

NOTE—Stage-discharge relation Jan. 1-4, 20-25 and Jan. 30 to Feb. 7 affected by ice.

Daily discharge, in second-feet, of Driftwood Branch Sinnemahoning Creek at Sterling Run, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	40	2,840	650	150	225	1,610	1,610	122	408	98	102
2	18	45	2,110	500	150	181	1,040	1,170	105	333	95	69
3	19	249	1,380	440	150	181	865	980	105	273	92	66
4	206	980	865	440	150	156	1,310	810	172	408	85	63
5	56	865	588	537	240	181	1,240	528	4,400	652	72	61
6	35	571	504	435	260	172	1,240	429	8,580	2,020	149	58
7	30	442	435	388	220	160	1,240	395	4,400	1,610	172	58
8	30	327	865	321	305	149	5,030	305	2,290	865	98	56
9	30	284	1,040	294	351	164	3,030	263	1,610	588	149	56
10	28	253	980	263	294	206	1,690	229	1,380	980	98	50
11	26	289	700	234	279	215	1,040	225	1,100	652	122	50
12	36	545	920	211	315	273	1,380	194	865	512	105	50
13	395	504	1,540	206	435	700	1,540	168	588	363	85	45
14	133	388	5,030	273	375	1,940	1,690	141	450	363	76	43
15	85	333	3,220	253	1,610	1,460	2,110	133	442	263	66	43
16	56	279	4,820	234	1,310	980	1,690	126	305	206	126	66
17	45	327	5,660	234	920	681	1,100	119	249	164	85	61
18	58	1,860	2,840	263	614	588	810	215	225	130	69	61
19	133	1,310	1,460	289	442	473	643	206	375	137	66	56
20	339	865	980	340	375	375	504	279	253	176	61	61
21	294	588	700	320	305	315	422	244	268	130	82	66
22	189	489	554	280	263	458	1,170	220	662	244	289	63
23	137	402	481	260	284	545	2,290	198	662	865	156	50
24	105	442	339	280	634	980	2,110	181	810	562	108	50
25	85	920	211	340	571	2,020	1,610	172	810	351	112	45
26	72	810	220	327	289	2,650	1,040	160	810	284	102	45
27	61	2,470	234	202	345	3,600	810	176	681	198	82	45
28	56	4,200	215	244	289	2,470	810	156	528	172	72	48
29	53	4,200	253	198	284	1,540	700	185	489	149	66	45
30	50	3,220	473	170	-------	2,110	1,610	149	458	112	61	43
31	43	-------	755	170	-------	2,470	-------	137	-------	98	149	-------

NOTE—Discharge Jan. 1-4, 20-25 and Jan. 30 to Feb. 7 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for West Branch Susquehanna River at Renovo, Bald Eagle Creek at Beech Creek Station and Pine Creek at Cedar Run.

Monthly discharge of Driftwood Branch Sinnemahoning Creek at Sterling Run, for the year ending Sept. 30, 1928

(Drainage area 270 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	395	18	94.2	0.349	0.40
November	4,200	40	950	3.52	3.93
December	5,660	211	1,390	5.15	5.94
January	650	170	310	1.15	1.33
February	1,610	150	421	1.56	1.68
March	3,600	149	923	3.42	3.94
April	5,030	422	1,450	5.37	5.99
May	1,610	119	339	1.26	1.45
June	8,820	105	1,140	4.22	4.71
July	2,020	98	460	1.70	1.96
August	289	61	105	.389	.45
September	102	43	55.8	.207	.23
The Year	8,820	18	635	2.35	32.01

SUSQUEHANNA BASIN—STATION NO. 14.

WEST BRANCH SUSQUEHANNA RIVER AT RENOVO

Location.—At three-span steel highway bridge, Eighth Street, Renovo, Clinton County.

Drainage Area.—2,990 square miles.

Records Available.—July 1, 1895, to December 31, 1903, and October 1, 1905, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by J. H. Baird. Elevation of gage zero 634.03 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of rocks. Control is at the first of a series of riffles about 1,000 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 11.90 feet observed at 1 p. m. June 6 (discharge, 56,200 second-feet); minimum, —0.57 foot at 8 a. m. October 3 (discharge 244 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 200 and 2,000 second-feet and fairly well defined from 2,000 to 75,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages, when they are fair.

Discharge measurements of West Branch Susquehanna River at Renovo during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
53	Aug. 31	J. M. Snavely	0.55	1,140

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Renovo, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	—0.55	1.04	6.94	3.60	2.63	2.73	7.15	8.62	1.39	5.19	1.31	1.10
2	— .56	.95	6.00	3.48	2.83	2.55	5.93	7.82	1.35	4.45	2.77	.87
3	— .52	1.85	5.11	2.81	2.57	2.35	4.98	6.12	1.21	3.85	2.57	.53
4	.29	5.40	4.37	2.24	2.55	1.92	4.85	5.07	1.42	3.50	1.79	.41
5	.65	5.65	3.84	2.35	3.50	2.16	4.82	4.29	5.81	5.20	1.62	.30
6	.85	4.85	3.46	2.43	4.25	2.03	4.55	3.79	10.88	9.29	1.54	.22
7	.44	4.20	3.20	2.63	3.20	1.85	4.46	3.35	9.57	6.92	1.73	.17
8	.16	3.70	4.50	2.40	2.94	1.78	8.09	2.96	7.07	5.25	1.53	.13
9	.00	3.26	5.77	2.23	3.72	1.75	8.25	2.67	5.97	4.21	1.24	.11
10	.00	3.00	5.25	2.16	4.08	1.71	6.35	2.44	6.62	4.29	1.55	.07
11	— .02	2.85	4.52	2.04	3.48	1.73	5.25	2.25	6.32	4.05	1.54	.02
12	— .05	3.06	4.77	1.94	3.21	1.98	5.24	2.04	5.19	3.59	1.65	— .02
13	1.35	3.09	6.28	1.88	2.87	3.22	6.28	1.88	4.35	3.22	1.53	— .06
14	2.55	2.92	9.66	1.89	2.83	5.75	6.08	1.73	3.79	3.15	1.15	— .11
15	2.00	2.82	9.25	1.86	4.68	6.05	6.70	1.57	3.42	3.52	.96	— .14
16	1.40	2.54	8.44	1.78	5.64	5.05	6.10	1.44	2.90	2.99	.79	— .09
17	1.04	2.55	9.80	1.63	4.70	4.42	5.25	1.36	2.47	2.49	.80	.12
18	1.11	3.90	7.58	1.68	4.14	4.06	4.60	1.77	2.22	2.18	.70	— .09
19	2.15	3.90	5.95	1.75	3.62	3.62	4.08	2.19	2.71	2.00	.66	— .12
20	6.12	3.48	4.83	3.00	3.10	3.23	3.58	2.33	3.30	2.92	.53	.00
21	6.65	3.04	4.21	3.57	2.79	2.91	3.20	2.36	3.10	3.75	.47	.02
22	5.15	2.79	3.73	2.95	2.26	2.95	4.15	2.33	4.52	3.47	1.37	.05
23	4.05	2.63	3.33	2.67	2.66	3.37	6.45	2.04	5.29	3.42	1.15	— .03
24	3.10	2.60	2.96	2.80	3.37	4.61	7.28	1.80	4.54	3.75	.83	— .10
25	2.53	2.50	2.53	2.80	4.45	6.18	6.72	1.63	4.69	2.94	.74	— .10
26	2.03	3.45	2.20	2.65	3.45	7.10	5.78	1.51	5.32	2.45	.83	— .14
27	1.85	4.35	1.89	2.45	2.95	7.75	5.00	1.46	4.85	2.12	.68	— .17
28	1.61	6.50	1.88	2.25	2.71	6.92	4.92	1.42	4.17	2.01	.62	— .22
29	1.43	8.40	1.97	1.82	2.70	5.55	5.11	1.53	4.32	1.77	.51	— .23
30	1.28	8.10	2.53	2.10	-------	6.62	7.09	1.48	5.52	1.54	.40	— .23
31	1.14	-------	2.85	2.76	-------	8.84	-------	1.55	-------	1.32	.61	-------

NOTE—Stage-discharge relation Jan. 30 to Feb. 4 affected by ice.

Daily discharge, in second-feet, of West Branch Susquehanna River at Renovo, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	252	1,640	22,000	7,160	2,600	4,820	23,800	32,500	2,200	13,100	2,050	1,770
2	248	1,580	17,100	6,870	2,800	4,590	16,600	27,400	2,200	9,770	5,060	1,450
3	266	2,900	12,600	5,060	3,000	4,140	12,200	17,600	1,910	8,060	4,590	1,100
4	855	14,100	9,770	3,710	3,800	3,100	11,400	12,600	2,200	6,870	2,900	950
5	1,220	15,100	7,750	4,140	6,870	3,710	11,400	9,400	16,100	13,100	2,530	855
6	1,450	11,400	6,870	4,140	9,050	3,300	10,600	7,750	48,600	37,400	2,360	765
7	1,000	9,050	6,060	4,590	6,060	2,900	10,200	6,590	39,500	22,000	2,710	722
8	722	7,450	10,200	4,140	5,300	2,900	29,200	5,550	23,200	13,100	2,360	722
9	600	6,320	16,100	3,710	7,450	2,900	29,800	4,820	17,100	9,050	1,910	680
10	600	5,550	13,100	3,710	8,710	2,710	19,100	4,140	20,200	9,400	2,530	640
11	585	5,060	10,200	3,300	6,870	2,710	13,100	3,710	18,600	8,380	2,360	600
12	562	5,800	11,400	3,100	6,060	3,300	13,100	3,300	13,100	7,160	2,530	585
13	2,200	5,800	18,600	3,100	5,300	6,060	18,600	3,100	9,770	6,060	2,360	555
14	4,590	5,300	40,200	3,100	5,060	16,100	17,600	2,710	7,750	6,060	1,910	518
15	3,300	5,060	36,700	3,100	11,000	17,100	20,800	2,530	6,590	6,870	1,580	497
16	2,200	4,360	31,100	2,900	15,100	12,200	17,600	2,200	5,300	5,550	1,390	532
17	1,640	4,590	40,900	2,530	11,000	9,770	13,100	2,200	4,360	4,360	1,390	680
18	1,770	8,060	26,200	2,710	8,710	8,710	10,600	2,900	3,710	3,710	1,270	532
19	3,710	8,060	17,100	2,900	7,160	7,160	8,710	3,710	4,820	3,300	1,220	511
20	17,600	6,870	11,400	5,550	5,800	6,060	7,160	3,920	6,320	5,300	1,100	600
21	20,200	5,550	9,050	7,160	5,060	5,300	6,060	4,140	5,800	7,750	1,000	600
22	13,100	5,060	7,450	5,550	3,920	5,550	9,050	3,920	10,200	6,870	2,200	640
23	8,380	4,590	6,320	4,820	4,820	6,590	19,100	3,300	13,600	6,590	1,910	578
24	5,800	4,590	5,550	5,060	6,590	10,600	24,400	2,900	10,200	7,750	1,450	525
25	4,360	4,360	4,360	5,060	9,770	18,100	20,800	2,530	11,000	5,300	1,330	525
26	3,300	6,590	3,710	4,590	6,590	23,200	16,100	2,360	13,600	4,140	1,450	497
27	2,900	9,770	3,100	4,140	5,550	27,400	12,200	2,360	11,400	3,500	1,270	476
28	2,530	19,600	3,100	3,710	4,820	22,000	11,800	2,200	9,050	3,300	1,160	442
29	2,200	31,100	3,300	2,900	4,820	15,100	12,600	2,360	9,400	2,900	1,050	436
30	2,050	29,200	4,360	2,600	-------	20,200	23,200	2,360	14,600	2,360	950	436
31	1,770	-------	5,060	2,600	-------	33,900	-------	2,530	-------	2,050	1,160	-------

NOTE—Discharge Jan. 30 to Feb. 4 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for West Branch Susquehanna River at Bower and Williamsport.

Monthly discharge of West Branch Susquehanna River at Renovo, for the year ending Sept. 30, 1928

(Drainage area 2,990 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	20,200	248	3,610	1.21	1.40
November	31,100	1,580	8,480	2.84	3.17
December	40,900	3,100	13,600	4.55	5.25
January	7,160	2,530	4,120	1.38	1.59
February	15,100	2,600	6,540	2.19	2.36
March	33,900	2,710	10,100	3.38	3.90
April	29,800	6,060	15,700	5.25	5.86
May	32,500	2,200	6,120	2.05	2.36
June	48,600	1,910	12,100	4.05	4.52
July	37,400	2,050	8,100	2.71	3.12
August	5,060	950	1,970	.659	.76
September	1,770	436	681	.228	.25
The Year	48,600	248	7,570	2.53	34.54

SUSQUEHANNA BASIN—STATION NO. 15

WEST BRANCH SUSQUEHANNA RIVER AT LOCK HAVEN

Location.—At four-span steel highway bridge, Jay Street, Lock Haven, Clinton County.

Drainage Area.—3,350 square miles.

Records Available.—October 1, 1913, to August 31, 1923, and August 14, 1925, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read twice daily by E. A. McGill to hundredths; during high stages more frequently. Elevation of gage zero 535.00 feet, United States Geological Survey datum. Previous to October 4, 1921, a painted staff gage on right side of first pier was read to half-tenths; elevation of gage zero was 540.95 feet. The standard chain gage attached to the downstream side of the covered woden bridge, for the purpose of obtaining low stages, was destroyed by fire on January 27, 1919.

Channel and Control.—Both banks are high and not subject to overflow. Control for medium and high stages is the remaining portion of an old dam about 2,300 feet downstream from the gage; probably permanent.

Extremes of Stage.—Maximum open water stage during the year, estimated from hydrograph, 14.80 feet at 8 p. m. June 6; a gage

height of 15.40 feet, estimated from hydrograph, was reached at 8 p. m. February 16, but the water was held back by an ice jam; minimum, 0.87 foot at 4.30 p. m. October 1.

Ice.—Stage-discharge relation seriously affected by ice.

Flood Warning.—Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Lock Haven, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.88	2.51	8.70	5.25	8.72	4.02	9.40	10.90	2.90	6.86	2.69	2.14
2	.89	2.38	7.75	4.90	9.05	3.90	7.57	9.92	2.81	6.12	3.04	2.23
3	.91	3.26	6.51	6.05	8.88	3.65	6.65	8.04	2.73	5.52	3.94	2.11
4	1.16	6.44	5.78	6.16	8.73	3.56	6.18	6.69	2.82	5.03	3.28	1.98
5	2.17	7.38	5.23	6.30	9.01	3.52	6.06	5.86	6.09	6.37	3.02	1.82
6	2.44	6.43	4.93	6.58	9.87	3.38	5.80	5.12	13.74	12.15	2.87	1.76
7	2.60	5.78	4.71	7.35	11.20	3.25	5.44	4.79	12.66	9.39	3.07	1.66
8	1.78	5.21	5.85	8.65	9.95	3.18	8.59	4.34	9.19	7.34	2.99	1.65
9	1.64	4.78	7.13	8.52	10.35	3.05	10.34	4.06	7.54	5.94	2.66	1.62
10	1.45	4.42	6.45	8.28	11.38	2.98	8.09	3.82	8.29	5.29	2.87	1.56
11	1.43	4.25	5.98	6.80	10.77	3.08	7.04	3.68	8.09	5.44	2.86	1.51
12	1.59	4.17	5.97	4.05	10.02	3.20	6.52	3.42	6.56	4.99	3.06	1.47
13	2.03	4.51	6.77	3.26	9.30	4.12	7.44	3.26	5.96	4.54	2.88	1.44
14	3.35	4.21	10.33	3.12	8.95	6.22	7.32	3.16	5.26	4.49	2.58	1.38
15	3.56	4.05	11.48	3.11	10.80	7.41	7.64	2.98	4.79	4.62	2.37	1.34
16	2.97	3.87	10.08	3.14	13.52	6.43	7.54	2.86	4.36	4.32	2.26	1.34
17	2.58	3.88	12.33	3.05	7.06	5.82	6.84	2.80	3.84	3.86	2.20	1.36
18	2.42	4.63	-------	3.07	5.40	5.20	6.10	2.87	3.56	3.54	2.17	1.50
19	2.89	5.35	7.60	3.08	4.90	4.95	5.56	3.34	3.74	3.31	2.10	1.38
20	6.86	4.93	6.60	3.55	4.59	4.62	5.02	3.92	4.36	3.62	2.01	1.43
21	8.24	4.57	5.55	4.90	4.36	4.30	4.47	3.78	4.36	4.39	1.93	1.58
22	6.94	4.27	5.02	6.45	3.88	4.16	5.29	3.70	4.99	4.82	2.41	1.48
23	4.94	4.02	4.68	7.80	3.62	4.35	7.68	3.59	6.57	4.72	2.84	1.43
24	4.37	4.08	4.10	8.40	4.68	5.35	8.84	3.38	6.29	4.99	2.40	1.40
25	3.90	4.48	3.78	9.32	5.13	7.20	8.34	3.18	5.79	4.40	2.25	1.35
26	3.49	4.84	3.50	9.88	4.80	8.51	6.59	2.95	6.64	3.79	2.25	1.39
27	3.24	5.58	3.58	10.33	4.52	9.10	5.74	2.88	6.39	3.52	2.18	1.33
28	3.00	7.53	3.60	10.46	4.12	8.70	6.32	2.87	5.74	3.26	2.06	1.30
29	2.90	9.93	3.50	10.10	4.14	7.42	7.12	2.90	5.51	3.02	2.01	1.30
30	2.78	9.94	3.62	9.58	-------	8.20	9.27	2.98	7.11	2.92	1.98	1.28
31	2.64	-------	3.98	9.05	-------	11.35	-------	3.00	-------	2.72	1.99	-------

NOTE—Gage height Dec. 18 unsatisfactory. Stage-discharge relation Dec. 27-30, Jan. 2-11 and Jan. 22 to Feb. 16 affected by ice.

SUSQUEHANNA BASIN—STATION NO. 16

BALD EAGLE CREEK AT MILESBURG

Location.—At two-span steel Pennsylvania Railroad bridge, Milesburg, Centre County, about 1,000 feet upstream from the mouth of Spring Creek.

Drainage Area.—140 square miles.

Records Available.—February 6, 1911, to September 30, 1928.

Gage.—Vertical staff fastened to downstream end of bridge pier; read by P. H. Haupt.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high, steep and rocky; left is low and subject to overflow at extremely high stages. Control is at a riffle about 100 feet upstream from the mouth of Spring Creek, where the bed is composed of gravel and boulders; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 5.60 feet at 11 a. m. March 30 and 10 p. m. April 30 (discharge, about 5,000 second-feet); minimum gage height, —0.03 foot from 8 a. m. October 1 to 8 a. m. October 3; minimum discharge, estimated 7 second feet on September 28, when the gage height was affected by backwater from a low cobble dam.

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by backwater from ice and low cobble dam. Rating curve well defined below 2,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for estimated periods and high stages, when they may be only fair.

Discharge measurements of Bald Eagle Creek at Milesburg during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
49	Oct. 10a	Geo. Weber	0.19	7.83
50	10a	do	.19	8.76
51	Aug. 27	J. M. Snavely	.34	28.9
52	27	do	.33	27.5

a Measurement made by wading 300 feet upstream from gage.

Daily Mean Gage Height, in feet, of Bald Eagle Creek at Milesburg, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	—0.03	0.58	2.64	1.16	1.03	1.30	2.55	4.27	0.51	2.40	1.26	0.28
2	— .03	.61	2.14	1.14	1.01	1.11	2.11	2.98	.42	1.84	1.09	.24
3	.08	4.00	1.64	1.12	1.00	1.06	1.94	2.27	.38	1.62	.78	.38
4	.84	3.97	1.38	1.10	1.41	1.02	1.94	1.90	1.26	1.51	.68	.31
5	.54	2.63	1.30	1.08	2.11	.91	1.76	1.57	2.57	2.54	.60	.22
6	.36	2.21	1.26	1.06	2.14	.78	1.64	1.38	3.18	2.61	.66	.26
7	.28	1.79	1.21	1.10	2.11	.74	1.76	1.21	2.38	2.04	1.90	.31
8	.22	1.60	3.99	1.04	2.58	.71	3.76	1.08	1.91	1.64	1.18	.40
9	.20	1.41	2.76	1.01	2.32	.75	2.76	1.01	2.81	1.28	.78	.36
10	.16	1.28	2.11	1.00	1.86	1.04	2.07	.96	3.32	1.48	.91	.24
11	.12	1.18	2.20	.98	1.57	1.01	1.96	.91	2.38	1.21	.75	.20
12	.39	1.16	2.24	.94	1.37	2.14	2.42	.84	1.78	1.21	.62	.19
13	1.58	1.12	2.36	.91	1.24	2.65	2.06	.78	1.56	1.75	.54	.18
14	1.11	1.06	3.46	.89	1.88	2.45	2.76	.72	1.31	1.60	.48	.16
15	.77	1.02	2.77	.84	2.70	2.20	2.58	.68	1.18	1.27	.41	.16
16	.64	.98	2.91	.81	2.16	1.82	2.14	.64	1.07	1.14	.38	.16
17	.61	1.16	3.01	.78	1.74	1.64	1.80	.60	.94	1.02	.34	.16
18	2.02	1.70	2.28	.76	1.51	1.58	1.61	.64	.78	.91	.31	.16
19	3.76	1.45	1.86	1.48	1.35	1.48	1.42	.60	1.51	.91	.34	.16
20	3.16	1.34	1.41	2.42	1.20	1.41	1.21	.68	1.58	2.47	.31	.21
21	2.02	1.24	1.22	1.84	1.16	1.25	1.23	.62	1.96	1.75	.36	.37
22	1.54	1.24	1.18	1.55	1.16	1.76	2.93	.52	3.60	1.38	.32	.24
23	1.31	1.30	1.14	1.44	1.28	2.24	3.48	.49	2.58	1.26	.30	.20
24	1.10	1.32	1.01	1.34	2.05	2.67	3.21	.44	3.08	1.14	.33	.24
25	1.01	1.57	.96	1.57	1.95	3.19	2.78	.70	3.68	1.04	.94	.32
26	.96	1.61	.96	1.35	1.72	3.01	2.21	.66	3.11	.95	.66	.21
27	.88	2.06	1.16	1.17	1.44	2.51	1.91	.61	2.81	.84	.50	.16
28	.80	2.87	1.21	1.06	1.32	2.00	2.86	.54	2.09	.78	.38	.12
29	.74	3.11	1.24	1.06	1.38	1.71	3.87	.48	3.27	.71	.28	.16
30	.68	2.87	1.26	1.06	-------	4.66	4.97	.71	3.02	.66	.21	.16
31	.62	-------	1.22	1.06	-------	3.57	-------	.62	-------	.62	.38	-------

NOTE—Stage-discharge relation Dec. 22 to Jan. 6 and Jan. 27 to Feb. 9 affected by ice. and Aug. 19 to Sept. 30 by the construction of low cobble dam about 700 feet downstream from gage.

Daily discharge, in second-feet, of Bald Eagle Creek at Milesburg, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.8	75	802	130	80	223	738	2,740	64	649	210	13
8	8.8	80	523	120	80	174	500	1,080	52	396	174	10
3	15	2,280	326	110	95	163	436	570	46	310	108	16
4	120	2,280	250	120	140	152	436	415	210	279	91	10
5	69	802	223	120	300	133	360	294	738	294	78	9
6	44	546	210	140	300	108	326	250	1,270	769	88	12
7	34	378	197	174	260	101	360	197	649	478	415	18
8	26	310	2,280	163	340	96	1,990	174	415	326	197	24
9	24	250	872	152	550	103	872	152	910	223	108	17
10	21	223	500	152	396	163	478	144	1,370	279	133	13
11	18	197	546	148	294	152	436	133	649	197	103	11
12	48	186	570	139	236	523	649	120	378	197	81	11
13	310	174	622	133	210	802	478	108	294	360	69	10
14	174	163	1,600	129	415	678	872	98	223	310	60	10
15	107	152	872	120	835	546	769	91	197	210	50	9
16	84	148	990	114	523	378	523	84	163	186	46	9
17	80	186	1,080	108	360	326	378	78	139	152	41	9
18	456	343	595	105	279	310	310	84	108	133	37	9
19	1,990	264	396	279	236	279	250	78	279	133	30	9
20	1,270	236	250	649	197	250	197	91	310	678	28	12
21	456	210	197	396	186	210	210	81	436	360	26	19
22	294	210	150	294	186	360	1,040	66	1,720	250	26	13
23	223	223	140	264	223	570	1,600	62	769	210	24	10
24	174	223	130	236	478	802	1,270	55	1,170	186	26	13
25	152	294	120	294	436	1,270	910	94	1,850	163	120	16
26	144	310	120	236	343	1,080	546	88	1,170	142	70	11
27	127	163	120	130	264	707	415	80	910	120	26	8
28	112	950	130	85	223	456	950	69	500	108	16	7
29	101	1,170	140	80	250	343	2,130	60	1,370	96	12	8
30	91	950	150	80	-------	3,390	3,900	96	1,080	88	8	8
31	81	-------	150	75	-------	1,720	-------	81	-------	81	16	-------

NOTE—Discharge estimated Dec. 22 to Jan. 6 and Jan. 27 to Feb. 9, because of ice, from weather records, study of gage height graph and comparison with similar studies for Bald Eagle Creek at Beech Creek Station and Little Juniata River at Tyrone, and Aug. 19 to Sept. 30, because of backwater from a low cobble dam constructed by the West Penn Power Company about 700 feet downstream from the gage, from two discharge measurements.

Monthly discharge of Bald Eagle Creek at Milesburg, for the year ending Sept. 30, 1928

(Drainage area 140 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,990	8.8	221	1.58	1.82
November	2,280	75	466	3.33	3.72
December	2,280	120	492	3.51	4.05
January	649	75	177	1.26	1.45
February	835	80	301	2.15	2.32
March	3,390	96	534	3.81	4.39
April	3,900	197	811	5.79	6.46
May	2,740	55	252	1.80	2.08
June	1,850	46	648	4.63	5.17
July	769	81	270	1.93	2.22
August	415	8	81.2	.580	.67
September	24	7	11.8	.084	.09
The Year	3,900	7	354	2.53	34.44

SUSQUEHANNA BASIN—STATION NO. 17

BALD EAGLE CREEK AT BEECH CREEK STATION

Location.—At three-span steel highway bridge, Beech Creek Station, Pennsylvania Railroad, Clinton County.

Drainage Area.—565 square miles.

Records Available.—June 24, 1910, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Joshua L. Rupert.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Right bank is high and not subject to overflow; left bank subject to overflow at extremely high stages. Bed is composed of gravel and rocks. Control is at a riffle, about 1,000 feet downstream from the gage, where there is a pronounced fall; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 8.10 feet at midnight April 30-May 1 (discharge, 10,100 second-feet); minimum, 1.52 feet from 4 p. m. October 1 to 8 a. m. October 3 (discharge, 140 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 800 second-feet and fairly well defined between 800 and 10,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages, when they are fair.

Discharge measurements of Bald Eagle Creek at Beech Creek Station during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
56	Oct. 10	Geo. Weber	1.63	181
57	Aug. 31	J. M. Snavely	1.98	320

Daily Mean Gage Height, in feet, of Bald Eagle Creek at Beech Creek Station, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.54	2.06	3.99	2.39	2.32	2.73	4.59	7.40	2.12	4.38	3.11	1.86
2	1.52	2.00	3.73	2.56	2.32	2.43	3.96	5.80	2.16	3.85	2.47	1.81
3	1.52	4.80	3.37	2.48	2.17	2.39	3.63	4.82	2.10	3.50	2.29	1.84
4	1.90	6.00	3.25	2.76	2.18	2.36	3.55	4.20	2.40	3.22	2.19	1.85
5	1.70	4.56	2.97	3.18	2.74	2.32	3.41	3.81	4.06	4.35	2.10	1.78
6	1.60	-------	2.85	3.42	2.36	2.17	3.30	3.48	6.24	5.29	2.20	1.78
7	1.60	3.45	2.82	3.22	2.31	2.15	3.34	3.28	5.15	4.26	2.81	1.88
8	1.68	3.24	5.83	2.46	2.10	2.15	5.70	3.12	4.15	3.66	2.35	1.78
9	1.61	3.03	4.63	2.26	2.36	2.15	4.70	3.00	4.16	3.28	2.20	1.74
10	1.62	2.88	3.85	2.24	2.93	2.11	4.14	2.90	4.62	3.18	2.22	1.72
11	1.60	2.80	3.66	2.16	2.87	2.09	3.78	2.80	4.00	2.92	2.13	1.70
12	1.75	2.80	3.82	2.16	2.63	2.49	4.30	2.66	3.60	2.96	2.05	1.70
13	2.91	2.69	3.67	2.17	2.55	3.45	3.96	2.59	3.39	3.16	2.01	1.70
14	2.18	2.60	5.17	2.18	2.95	3.80	4.14	2.53	3.09	3.26	1.98	1.71
15	1.92	2.56	4.65	2.10	4.54	3.55	4.36	2.48	2.86	2.77	1.92	1.69
16	1.91	2.52	5.22	2.04	3.61	3.35	3.98	2.40	2.74	2.66	1.92	1.70
17	1.84	2.75	5.27	2.02	3.30	3.15	3.72	2.39	2.60	2.56	1.90	1.71
18	2.70	3.29	4.37	2.08	3.18	3.11	3.46	2.46	2.50	2.40	1.89	1.70
19	4.50	2.98	3.77	2.13	2.84	2.89	3.26	2.40	2.84	2.50	1.91	1.77
20	4.60	2.82	3.48	2.93	2.75	2.74	3.04	2.44	2.61	3.61	1.90	1.74
21	3.50	2.79	3.29	2.50	2.61	2.74	2.94	2.46	2.90	3.00	1.85	1.80
22	3.09	2.80	3.05	2.42	2.55	2.90	4.25	2.43	4.26	2.80	1.99	1.68
23	2.75	2.62	2.90	2.49	2.74	3.80	5.50	2.34	3.60	2.75	1.94	1.65
24	2.59	2.82	2.83	2.46	3.75	4.13	5.48	2.24	3.48	2.52	1.90	1.65
25	2.45	3.02	2.49	2.56	3.00	4.33	4.86	2.22	4.62	2.41	2.24	1.73
26	2.34	2.92	2.37	2.52	2.80	4.40	4.21	2.20	5.80	2.33	1.96	1.80
27	2.26	3.52	2.35	2.32	2.67	4.30	3.82	2.20	4.74	2.32	1.91	1.70
28	2.20	4.12	2.27	2.22	2.59	3.82	5.11	2.21	3.97	2.32	1.85	1.71
29	2.12	4.77	2.41	2.21	2.61	3.50	6.06	2.16	4.61	2.22	1.76	1.62
30	2.10	4.46	2.43	2.17	-------	6.03	7.50	2.19	5.20	2.12	1.64	1.80
31	2.06	-------	2.47	2.22	-------	5.69	-------	2.23	-------	2.15	1.96	-------

NOTE—Gage height Nov. 6 unsatisfactory and Jan. 2-7, 22, 23 and Jan. 29 to Feb. 3 affected by ice.

Daily discharge, in second-feet, of Bald Eagle Creek at Beech Creek Station, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	147	373	2,260	600	320	883	3,070	8,360	400	2,790	1,220	276
2	140	346	1,880	550	340	638	2,260	4,980	430	2,000	638	253
3	140	3,350	1,530	550	400	600	1,760	3,350	400	1,640	528	266
4	294	5,340	1,320	550	460	564	1,760	2,520	600	1,320	460	271
5	206	3,070	1,070	700	883	528	1,530	2,000	2,390	2,790	400	240
6	168	2,200	973	850	564	430	1,420	1,640	5,720	4,110	460	240
7	168	1,530	926	750	528	430	1,420	1,420	3,950	2,650	926	285
8	198	1,320	4,980	638	400	430	4,800	1,220	2,520	1,880	564	240
9	172	1,120	3,070	494	564	430	3,210	1,120	2,520	1,420	460	223
10	176	1,020	2,000	494	1,070	400	2,390	1,020	3,070	1,320	460	214
11	168	926	1,880	430	973	400	2,000	926	2,260	1,020	430	206
12	227	926	2,000	430	798	675	2,650	798	1,760	1,070	373	206
13	1,020	840	1,880	430	715	1,530	2,260	755	1,530	1,320	346	206
14	460	755	3,950	460	1,070	2,000	2,390	715	1,220	1,420	336	210
15	304	715	3,070	400	2,930	1,760	2,790	675	973	883	304	202
16	299	675	3,950	373	1,760	1,530	2,260	600	883	798	304	206
17	260	883	4,110	346	1,420	1,320	1,880	600	755	715	294	210
18	840	1,420	2,790	400	1,320	1,220	1,640	638	675	600	289	206
19	2,930	1,120	2,000	430	973	1,020	1,420	600	973	675	299	235
20	3,070	926	1,640	1,070	883	883	1,120	638	755	1,760	294	223
21	1,640	926	1,420	675	755	883	1,070	638	1,020	1,120	271	248
22	1,220	926	1,120	460	715	1,020	2,520	638	2,650	926	341	198
23	883	755	1,020	380	883	2,000	4,450	564	1,760	883	315	187
24	755	926	973	638	2,000	2,390	4,450	494	1,640	675	294	187
25	638	1,120	675	715	1,120	2,650	3,500	460	3,070	600	494	219
26	564	1,020	564	675	926	2,790	2,520	460	4,980	564	325	248
27	494	1,640	564	528	798	2,650	2,000	460	3,210	528	299	206
28	460	2,390	494	460	755	2,000	3,800	460	2,260	528	271	210
29	400	3,350	600	380	755	1,640	5,530	430	3,070	460	231	176
30	400	2,930	638	340	-------	5,340	8,600	460	3,950	400	183	248
31	373	-------	638	320	-------	4,800	-------	494	-------	430	325	-------

NOTE—Discharge estimated Nov. 6, because of unsatisfactory gage height record, and Jan. 2-7, 22, 23 and Jan. 29 to Feb. 3, because of ice, from weather records, study of gage height graph and comparison with similar studies for Pine Creek at Cedar Run, Lycoming Creek near Trout Run and Loyalsock Creek at Loyalsock.

Monthly discharge of Bald Eagle Creek at Beech Creek Station, for the year ending Sept. 30, 1928

(Drainage area 565 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	3,070	140	620	1.10	1.27
November	5,340	346	1,490	2.64	2.94
December	4,980	494	1,810	3.20	3.69
January	1,070	320	533	.943	1.09
February	2,930	320	934	1.65	1.78
March	5,340	400	1,480	2.62	3.02
April	8,600	1,070	2,750	4.87	5.43
May	8,360	430	1,290	2.28	2.63
June	5,720	400	2,050	3.63	4.05
July	4,110	400	1,270	2.25	2.59
August	1,220	183	411	.727	.84
September	285	176	225	.398	.44
The Year	8,600	140	1,240	2.19	29.77

SUSQUEHANNA BASIN—STATION NO. 18

PINE CREEK AT CEDAR RUN

Location.—At single-span steel highway bridge, Cedar Run, Lycoming County.

Drainage Area.—590 square miles.

Records Available.—July 19, 1918, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by C. R. Nivison. Elevation of gage zero 781.96 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high; left is low but not subject to overflow. Bed is composed of gravel. Control is at a riffle, where the bed is composed of gravel, about 500 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 7.20 feet at noon June 6 (discharge, about 12,200 second-feet); minimum, 0.98 foot at 8 a. m. October 1 and from 8 a. m. October 2 to 5 p. m. October 3 (discharge, 15 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 50 and 2,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages, when they are fair.

Dicharge measurements of Pine Creek at Cedar Run during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
34	Aug. 30a	J. M. Snavely	1.30	108

a Measurement made by wading 2.500 feet upstream from gage.

Daily Mean Gage Height, in feet, of Pine Creek at Cedar Run, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.98	1.50	4.80	2.60	2.32	2.18	3.47	5.38	1.91	2.76	1.60	1.32
2	.98	1.50	4.20	2.39	2.27	2.03	3.19	4.45	1.89	2.53	1.56	1.28
3	.98	3.65	3.88	2.45	2.28	1.95	3.09	3.76	1.83	2.38	1.51	1.28
4	1.23	4.20	3.65	2.40	2.22	1.86	3.38	3.36	2.01	2.29	1.47	1.26
5	1.36	3.68	3.04	2.42	2.72	1.98	3.42	3.06	5.22	3.07	1.44	1.24
6	1.22	3.20	2.88	2.36	2.50	2.34	3.40	2.78	6.90	4.28	1.64	1.22
7	1.14	2.66	2.90	2.26	2.28	2.44	3.43	2.65	5.55	3.49	1.80	1.22
8	1.13	2.61	4.46	2.15	2.39	2.47	4.88	2.47	4.44	2.99	1.60	1.21
9	1.10	2.52	3.31	2.10	3.05	2.44	4.40	2.38	4.07	2.68	1.48	1.21
10	1.08	2.45	3.24	2.05	2.74	2.29	3.76	2.36	3.94	2.79	1.81	1.20
11	1.06	2.52	3.33	1.98	2.46	2.25	3.35	2.28	3.46	2.78	1.85	1.18
12	1.07	2.77	3.33	1.90	2.36	2.20	3.27	2.18	3.15	4.12	1.67	1.18
13	2.03	2.86	3.50	1.86	2.19	2.82	3.11	2.18	2.88	3.43	1.53	1.16
14	1.78	2.74	4.72	2.02	2.49	3.72	3.06	2.15	2.68	3.46	1.48	1.16
15	1.50	2.65	4.30	1.94	3.48	3.19	3.61	1.90	2.58	2.91	1.42	1.10
16	1.41	2.51	4.54	1.88	2.79	2.90	3.44	1.87	2.33	2.64	1.38	1.10
17	1.36	3.17	4.68	1.84	2.54	2.68	3.25	1.84	2.14	2.42	1.35	1.12
18	1.52	4.70	3.89	1.83	2.48	2.64	3.04	1.92	2.07	2.24	1.38	1.17
19	2.70	4.02	3.44	1.82	2.16	2.48	2.89	1.86	2.12	2.14	1.42	1.18
20	3.80	3.44	3.16	1.97	2.16	2.34	2.64	2.32	2.06	2.08	1.36	1.43
21	3.10	3.10	2.90	1.89	2.16	2.24	2.50	2.25	2.07	1.96	1.35	1.50
22	2.58	2.88	2.69	1.90	2.18	2.24	2.88	2.28	2.23	2.02	1.89	1.33
23	2.27	2.66	2.54	1.90	2.46	2.50	3.80	2.33	2.08	2.42	1.66	1.23
24	2.10	3.03	2.38	1.92	3.05	3.08	4.20	2.26	2.01	2.10	1.52	1.20
25	1.96	3.40	2.26	2.05	2.61	4.03	3.92	2.15	2.12	1.94	1.46	1.18
26	1.85	2.94	2.21	1.98	2.44	4.55	3.42	1.96	2.30	1.84	1.42	1.20
27	1.76	3.82	2.20	1.89	2.49	5.33	3.23	1.88	2.16	1.82	1.36	1.18
28	1.69	5.17	2.22	1.75	2.35	4.72	3.29	1.88	2.10	1.79	1.32	1.18
29	1.64	5.35	2.22	2.10	2.20	4.15	3.16	1.94	2.37	1.70	1.30	1.18
30	1.59	4.82	2.36	2.41	-------	4.10	4.80	1.91	3.02	1.62	1.28	1.18
31	1.55	-------	2.34	2.36	-------	3.94	-------	2.07	-------	1.58	1.33	-------

NOTE—Stage-discharge relation Jan. 3-5, 22-25, Jan. 29 to Feb. 13, Feb. 28 and Mar. 5-11 affected by ice.

Daily discharge, in second-feet, of Pine Creek at Cedar Run, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	210	5,300	1,070	320	688	2,290	6,980	465	1,240	265	120
2	15	210	3,820	872	360	568	1,880	4,280	451	1,020	243	103
3	15	2,570	3,180	700	420	494	1,720	2,970	410	872	216	103
4	84	3,820	2,570	700	500	431	2,200	2,120	530	778	194	95
5	139	2,770	1,640	800	550	400	2,200	1,640	6,400	1,640	179	88
6	80	1,880	1,430	825	500	360	2,200	1,300	11,300	4,050	289	80
7	55	1,120	1,430	733	460	320	2,290	1,120	7,580	2,380	390	80
8	52	1,070	4,520	647	650	320	5,560	921	4,280	1,570	265	77
9	43	970	2,040	606	1,100	320	4,280	872	3,600	1,180	200	77
10	38	921	1,960	568	850	360	2,970	825	3,180	1,300	397	73
11	33	970	2,120	516	600	460	2,120	778	2,290	1,300	424	67
12	36	1,240	2,120	458	460	688	1,960	688	1,800	3,600	306	67
13	568	1,360	2,380	431	460	1,300	1,720	688	1,430	2,290	226	61
14	377	1,240	5,030	530	970	2,770	1,640	647	1,180	2,290	200	61
15	210	1,120	4,050	487	2,380	1,880	2,570	458	1,070	1,430	168	43
16	163	970	4,520	444	1,300	1,430	2,290	438	825	1,120	148	43
17	139	1,800	5,030	417	1,020	1,180	1,960	417	647	872	134	49
18	221	5,030	3,180	410	970	1,120	1,640	472	568	733	148	64
19	1,180	3,390	2,290	404	647	970	1,430	431	606	647	168	67
20	2,970	2,290	1,800	508	647	825	1,120	778	568	606	139	174
21	1,720	1,720	1,430	451	647	733	970	733	568	501	134	210
22	1,070	1,430	1,180	400	688	733	1,430	778	733	530	451	124
23	733	1,120	1,020	360	921	970	2,970	825	606	872	300	84
24	606	1,640	872	400	1,640	1,720	3,820	733	530	606	221	73
25	501	2,200	733	500	1,070	3,390	3,180	647	606	487	189	67
26	424	1,500	688	516	921	4,780	2,200	501	778	417	168	73
27	364	2,970	688	451	970	6,700	1,960	444	647	404	139	67
28	318	6,400	688	357	800	5,030	2,040	444	606	383	120	67
29	289	6,980	688	360	688	3,820	1,800	487	825	324	110	67
30	260	5,300	825	320	-------	3,600	5,300	465	1,570	277	103	67
31	238	-------	825	320	-------	3,180	-------	568	-------	254	124	-------

NOTE—Discharge Jan. 3-5, 22-25, Jan. 29 to Feb. 13, Feb. 28 and Mar. 5-11 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Lycoming Creek near Trout Run and Towanda Creek near Monroeton.

Monthly discharge of Pine Creek at Cedar Run, for the year ending Sept. 30, 1928
(Drainage area 590 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	2,970	15	418	0.708	0.82
November	6,980	210	2,210	3.75	4.18
December	5,300	688	2,260	3.83	4.42
January	1,070	320	534	.905	1.04
February	2,380	320	811	1.37	1.48
March	6,700	320	1,660	2.81	3.24
April	5,560	970	2,390	4.05	4.52
May	6,980	417	1,140	1.93	2.22
June	11,300	410	1,890	3.20	3.57
July	4,050	254	1,160	1.97	2.27
August	451	103	218	.369	.43
September	210	43	83.0	.141	.16
The Year	11,300	15	1,230	2.08	28.35

SUSQUEHANNA BASIN—STATION NO. 19

LYCOMING CREEK NEAR TROUT RUN

Location.—At single-span steel highway bridge about two and one-half miles upstream from Trout Run, Lycoming County.

Drainage Area.—185 square miles.

Records Available.—December 4, 1913, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by E. L. Apker. Elevation of gage zero 693.4 feet; United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—The right bank overflows during extremely high stages; the left is high and does not overflow. The bed is composed of gravel and large stones. Control is at a riffle about 100 feet downstream from the gage, where the bed is composed of gravel; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 11.00 feet observed at 7 a. m. June 6 (discharge, about 8,000 second-feet); minimum, 1.68 feet at 10 a. m. October 3 (discharge, 13 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined from 30 to 3,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height rating table. Results fair.

Discharge measurements of Lycoming Creek near Trout Run during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
68	Apr. 9	R. P. Mason	4.21	924
69	Aug. 29a	Geo. Weber	1.99	49.3

a Measurement made by wading 300 feet upstream from gage.

Daily Mean Gage Height, in feet, of Lycoming Creek near Trout Run, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.72	2.44	4.80	3.25	2.40	2.86	3.86	6.42	2.56	5.60	2.24	1.94
2	1.70	2.50	4.27	2.77	2.40	2.79	3.67	5.40	2.46	4.38	2.21	1.92
3	1.76	4.22	3.95	2.75	2.37	2.56	3.51	4.59	2.38	3.95	2.16	1.92
4	2.26	4.10	3.65	2.79	2.30	2.50	3.51	4.15	2.62	3.85	2.12	2.00
5	2.10	3.84	3.55	2.95	2.35	2.48	3.61	3.92	5.52	4.78	2.10	1.96
6	1.98	3.66	3.42	2.69	2.44	2.44	3.57	3.62	9.32	5.11	2.10	1.94
7	1.93	3.36	3.78	2.62	2.38	2.40	3.65	3.36	5.92	4.20	2.12	1.92
8	1.89	3.15	8.04	2.65	2.46	2.38	4.72	3.16	4.70	-------	2.10	1.90
9	1.87	3.06	5.65	2.89	2.98	2.38	4.20	3.02	4.52	3.32	2.04	1.90
10	1.86	3.01	4.42	2.77	2.61	2.37	3.84	2.94	4.62	3.26	2.34	1.88
11	1.84	3.06	4.08	2.59	2.41	2.25	3.62	2.86	4.09	3.26	2.17	1.86
12	2.10	3.11	3.96	2.53	2.40	2.38	3.73	2.75	3.72	3.61	2.09	1.84
13	4.10	3.00	4.22	2.51	2.30	3.62	3.50	2.66	3.45	3.35	2.04	1.84
14	2.72	2.90	5.53	2.68	2.61	4.24	3.84	2.60	3.25	4.15	2.00	1.82
15	2.40	2.86	4.55	2.62	4.32	3.51	4.40	2.54	3.10	3.53	2.01	1.82
16	2.28	2.83	4.88	2.63	3.76	3.26	3.98	2.49	2.89	3.22	1.96	1.80
17	2.21	4.07	4.86	2.49	3.28	3.08	3.74	2.47	2.74	3.00	1.96	1.78
18	2.60	6.37	4.35	2.50	3.16	2.97	3.54	2.62	2.65	2.75	1.96	1.78
19	5.24	4.76	3.92	2.52	2.76	2.95	3.38	2.80	2.69	2.72	2.05	1.80
20	6.18	4.12	3.72	2.51	2.91	2.83	3.20	3.51	2.62	2.82	2.01	2.08
21	4.85	3.78	3.51	2.32	2.88	2.79	3.08	3.25	2.45	2.62	1.96	2.09
22	4.04	3.64	3.29	2.43	2.78	2.84	4.15	3.62	2.24	2.76	2.42	1.96
23	3.54	3.45	3.15	2.39	3.01	2.90	5.00	3.70	1.90	2.94	2.32	1.86
24	3.24	3.46	2.97	2.34	4.33	3.83	5.06	3.31	1.79	2.70	2.18	1.79
25	3.00	3.64	2.79	2.75	3.26	4.40	4.62	3.16	2.95	2.52	2.11	1.78
26	2.88	3.35	2.79	2.61	3.10	4.85	4.14	3.02	4.55	2.42	2.04	1.82
27	2.78	4.30	2.68	2.51	3.08	5.17	3.90	2.92	4.34	2.54	2.01	1.84
28	2.70	5.44	2.63	2.50	2.91	4.30	4.40	2.78	3.82	2.62	1.97	1.86
29	2.62	5.05	2.69	2.41	2.79	3.93	4.90	2.73	5.09	2.36	1.96	1.86
30	2.56	4.55	2.82	2.41	-------	4.60	6.05	2.72	7.91	2.26	1.96	1.88
31	2.48	-------	2.97	2.42	-------	4.37	-------	2.73	-------	2.21	1.96	-------

NOTE—Stage-discharge relation Jan. 3-5, 16-19, 22, 23, Jan. 28 to Feb 3 and Feb. 20-22 affected by ice. Gage height July 8 not observed.

Daily discharge, in second-feet, of Lycoming Creek near Trout Run, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	138	1,220	410	80	260	706	2,470	178	1,780	91	39
2	14	154	923	228	80	244	609	1,620	144	985	84	36
3	19	864	757	200	95	178	517	1,100	123	757	74	36
4	95	809	562	180	104	154	517	864	182	657	67	47
5	63	657	562	180	116	149	562	706	1,700	1,220	63	41
6	44	609	473	212	138	138	562	562	5,600	1,420	63	39
7	37	452	657	182	122	128	562	452	2,020	864	67	36
8	32	369	4,140	197	144	123	1,160	369	1,160	600	63	33
9	30	340	1,780	277	312	123	864	312	1,040	430	53	33
10	29	312	985	228	182	121	657	294	1,100	410	114	31
11	26	340	809	182	131	93	562	260	809	410	76	29
12	63	349	757	178	128	123	609	228	609	562	61	26
13	809	312	864	154	104	562	517	197	495	452	53	26
14	212	277	1,700	212	182	864	657	182	410	864	47	24
15	128	260	1,100	182	923	517	985	178	349	517	49	24
16	100	260	1,280	140	657	410	757	151	277	389	41	22
17	84	809	1,280	120	430	349	609	146	228	312	41	20
18	182	2,470	985	100	369	294	517	182	197	228	41	20
19	1,480	1,220	706	120	228	294	473	244	212	212	55	22
20	2,290	809	609	154	200	260	389	517	182	244	49	60
21	1,220	657	517	109	200	244	349	410	141	182	41	61
22	757	562	430	95	220	260	864	562	91	228	133	41
23	517	495	369	100	312	277	1,350	609	33	294	109	29
24	410	495	294	114	923	657	1,420	430	21	212	78	21
25	212	562	244	228	410	985	1,100	369	294	154	65	20
26	277	452	244	182	349	1,220	809	312	1,100	133	53	24
27	244	923	212	154	349	1,480	706	277	923	178	49	24
28	212	1,620	197	130	277	923	985	244	657	182	43	29
29	182	1,350	212	100	244	706	1,280	228	1,420	118	41	29
30	178	1,100	244	95	-------	1,100	2,110	212	4,030	95	41	31
31	149	-------	294	80	-------	985	-------	228	-------	84	41	-------

NOTE—Discharge estimated Jan. 3-5, 16-19, 22, 23, Jan. 28 to Feb. 3 and Feb. 20-22, because of ice, and July 8, because of no gage height record, from weather records, study of gage height graph and comparison with similar studies for Loyalsock Creek at Loyalsock, Towanda Creek near Monroeton and Lackawanna River at Moosic.

Monthly discharge of Lycoming Creek near Trout Run, for the year ending Sept. 30, 1928

(Drainage area 185 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	2,290	14	329	1.78	2.05
November	2,470	138	668	3.61	4.03
December	4,140	197	820	4.43	5.11
January	410	80	168	.908	1.05
February	923	80	276	1.49	1.61
March	1,480	93	459	2.48	2.86
April	2,110	349	792	4.28	4.78
May	2,470	146	481	2.60	3.00
June	5,600	21	858	4.64	5.18
July	1,780	84	489	2.64	3.04
August	133	41	62.8	.339	.39
September	61	20	31.8	.172	.19
The Year	5,600	14	452	2.44	33.29

WEST BRANCH SUSQUEHANNA RIVER AT WILLIAMSPORT

Location.—At five-span steel highway bridge, Market Street, Williamsport, Lycoming County.

Drainage Area.—5,670 square miles.

Records Available.—March 1, 1895, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by Veronica E. April. Elevation of gage zero 494.55 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and rocky. Bed is composed of silt and gravel; shifts slightly. Control probably permanent.

Extremes of Discharge.—Maximum stage during the year, 17.86 feet observed at 5.30 p. m. June 6 (discharge, 108,000 second-feet); minimum, 0.12 foot from 5.30 p. m. October 2 to 8 a. m. October 3 (discharge, 840 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year. Rating curve well defined between 400 and 120,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of West Branch Susquehanna River at Williamsport during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
58	Sept. 17a	Geo. Weber	0.30	1,110

a Measurement made by wading 2,300 feet upstream from gage.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Williamsport, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.16	1.68	10.20	4.10	1.94	4.34	10.67	13.20	2.57	8.85	2.09	1.10
2	.13	1.59	8.89	3.92	2.16	4.37	8.69	12.55	2.36	7.25	2.37	1.24
3	.14	2.20	7.75	3.45	2.22	3.78	-7.29	10.00	2.23	6.15	3.27	1.20
4	.39	6.90	6.66	3.80	2.07	3.42	6.63	8.08	2.17	5.35	2.69	.96
5	.47	8.45	5.82	3.41	2.47	3.14	6.49	6.92	5.16	6.38	2.13	.80
6	1.05	7.33	5.30	3.07	3.01	3.05	6.39	6.00	15.40	13.36	1.99	.72
7	1.14	6.67	4.83	3.40	3.94	2.76	6.20	5.30	15.56	11.36	2.14	.68
8	.86	5.65	8.10	3.76	3.99	2.59	8.82	4.80	11.46	8.41	2.37	.62
9	.60	4.88	9.56	3.46	4.42	2.32	11.60	4.32	9.16	6.75	1.99	.59
10	.47	4.39	8.23	3.31	4.92	2.39	9.45	3.87	9.21	5.74	1.79	.57
11	.42	4.05	6.94	3.25	5.00	2.50	7.76	3.63	9.16	6.13	2.11	.51
12	.60	4.01	6.59	2.97	4.44	2.42	7.05	3.22	7.76	6.00	1.99	.49
13	2.02	4.22	7.00	3.01	4.30	3.65	7.42	3.06	6.60	5.66	1.97	.43
14	2.80	4.14	9.97	2.89	3.90	6.22	7.71	2.85	5.70	5.68	1.82	.39
15	2.83	3.88	12.85	3.09	6.36	7.95	8.45	2.62	5.03	5.11	1.51	.35
16	2.28	3.67	11.05	2.81	7.47	7.00	8.52	2.47	4.46	4.91	1.32	.31
17	1.67	3.95	13.38	2.65	8.15	6.09	7.58	2.35	3.85	4.05	1.17	.30
18	1.85	7.75	11.45	2.37	6.00	5.59	6.73	2.31	3.44	3.54	1.17	.38
19	3.70	7.20	8.97	2.34	5.10	5.07	5.92	2.85	3.38	3.15	1.08	.44
20	7.35	6.35	7.40	2.74	4.52	4.52	5.32	3.93	3.84	3.24	1.06	.61
21	8.70	5.55	6.42	3.20	3.90	4.12	4.71	4.13	4.03	4.04	.96	.67
22	7.50	4.80	5.61	3.20	3.23	3.96	5.30	4.02	4.56	4.74	1.37	.67
23	5.65	4.40	5.00	2.71	3.16	4.50	8.55	4.34	6.18	4.32	1.98	.57
24	4.52	4.10	4.45	3.08	5.68	5.61	10.57	3.74	5.81	4.43	1.66	.48
25	3.79	4.40	3.77	3.48	6.26	7.80	10.19	3.30	5.71	4.17	1.41	.39
26	3.27	4.95	3.08	3.87	5.48	9.45	8.79	3.01	7.16	3.45	1.25	.41
27	2.79	5.30	1.90	3.20	4.52	10.34	7.54	2.76	7.25	3.11	1.20	.40
28	2.47	8.00	2.40	2.70	4.12	10.30	7.81	2.62	6.26	3.07	1.08	.36
29	2.21	10.75	3.03	2.50	4.16	8.50	8.39	2.53	6.40	2.69	.98	.31
30	2.12	11.40	3.20	2.57	-------	8.50	10.10	2.57	10.39	2.34	.95	.39
31	1.85	-------	3.70	2.19	-------	11.83	-------	2.63	-------	2.06	1.13	-------

Daily discharge, in second-feet, of West Branch Susquehanna River at Williamsport, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	900	3,360	40,400	10,000	3,790	10,800	43,500	62,000	5,470	32,300	4,240	2,240
2	900	3,150	32,900	9,350	4,480	11,200	31,800	57,000	4,970	23,900	4,970	2,410
3	900	4,480	27,000	7,750	4,480	9,020	24,400	39,200	4,480	19,000	7,440	2,410
4	1,210	22,400	21,400	9,020	4,240	7,750	20,900	28,500	4,480	15,400	5,730	2,000
5	1,280	30,200	17,200	7,750	5,220	6,850	20,400	22,400	14,500	19,900	4,240	1,770
6	2,080	24,400	14,900	6,850	6,560	6,560	19,900	18,100	82,400	63,700	4,010	1,620
7	2,240	21,400	12,800	7,750	9,350	6,000	19,000	14,900	84,400	48,000	4,240	1,620
8	1,840	16,200	28,500	9,020	9,690	5,470	32,300	12,800	48,800	30,200	4,970	1,480
9	1,480	13,200	36,800	8,060	11,200	4,720	49,400	10,800	34,600	21,900	4,010	1,480
10	1,280	11,200	29,100	7,440	13,200	4,970	35,700	9,350	34,600	16,700	3,570	1,410
11	1,210	9,690	22,400	7,140	13,600	5,220	27,000	8,380	34,600	18,500	4,240	1,340
12	1,480	9,690	20,900	6,560	11,200	4,970	22,900	7,440	27,000	18,100	4,010	1,340
13	4,010	10,400	22,900	6,560	10,800	8,380	24,900	6,850	20,900	16,700	4,010	1,280
14	6,000	10,000	39,200	6,280	9,350	19,000	26,400	6,000	16,700	16,700	3,570	1,210
15	6,000	9,350	58,600	6,850	19,900	28,000	30,200	5,470	13,600	14,000	2,950	1,140
16	4,720	8,700	45,400	6,000	25,400	22,900	30,700	5,220	11,500	13,200	2,580	1,080
17	3,360	9,690	63,700	5,470	29,100	18,500	25,900	4,970	9,020	9,690	2,410	1,080
18	3,570	27,000	48,000	4,970	18,100	16,200	21,400	4,720	7,750	8,060	2,410	1,210
19	8,700	23,900	33,500	4,720	14,000	14,000	17,600	6,000	7,750	7,140	2,240	1,280
20	24,900	19,900	24,900	5,730	11,500	11,500	14,900	9,350	9,020	7,140	2,240	1,480
21	31,800	16,200	19,900	7,140	9,350	10,000	12,300	10,000	9,690	9,690	2,000	1,550
22	25,400	12,800	16,200	7,140	7,140	9,690	14,900	9,690	11,900	12,300	2,760	1,550
23	16,200	11,200	13,600	5,730	7,140	11,500	31,200	10,800	19,000	10,800	4,010	1,410
24	11,500	10,000	11,200	6,850	16,700	16,200	42,800	8,700	17,200	11,200	3,360	1,340
25	9,020	11,200	9,020	8,060	19,500	27,000	40,400	7,440	16,700	10,400	2,760	1,210
26	7,440	13,600	6,850	9,350	15,800	35,700	32,300	6,560	23,900	7,750	2,410	1,210
27	6,000	14,900	3,790	7,140	11,500	41,000	25,400	6,000	23,900	6,850	2,410	1,210
28	5,220	28,000	4,970	5,730	10,000	41,000	27,000	5,470	19,500	6,850	2,240	1,140
29	4,480	44,100	6,560	5,220	10,400	30,700	30,200	5,220	19,900	5,730	2,080	1,080
30	4,240	48,000	7,140	5,470	-------	30,700	39,800	5,470	41,600	4,720	2,000	1,210
31	3,570	-------	8,700	4,480	-------	50,900	-------	5,470	-------	4,240	2,240	-------

Monthly discharge of West Branch Susquehanna River at Williamsport, for the year ending Sept. 30, 1928

(Drainage area 5,670 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	31,800	900	6,550	1.16	1.34
November	48,000	3,150	16,600	2.93	3.27
December	63,700	3,790	24,100	4.25	4.90
January	10,000	4,480	6,950	1.23	1.42
February	29,100	3,790	11,800	2.08	2.24
March	50,900	4,720	17,000	3.00	3.46
April	49,400	12,300	27,800	4.90	5.47
May	62,000	4,720	13,600	2.40	2.77
June	84,400	4,480	22,700	4.00	4.46
July	63,700	4,240	16,500	2.91	3.36
August	7,440	2,000	3,430	.605	.70
September	2,410	1,080	1,460	.257	.29
The Year	84,400	900	14,000	2.47	33.68

SUSQUEHANNA BASIN—STATION NO. 21

LOYALSOCK CREEK AT LOYALSOCK

Location.—At single-span steel highway bridge, Loyalsock, Lycoming County.

Drainage Area.—433 square miles.

Records Available.—July 27, 1925 to September 30, 1928.

Gages.—Automatic water-stage recorder about 15 feet downstream from the left abutment, and staff gage attached to outside of automatic gage well. A standard chain was attached to downstream side of bridge November 8, 1926. The staff gage is on the stream side of the well; it is sloping from 0 to 6.5 feet and vertical from 6.5 to 14 feet. Recorder inspected and chain gage read by G. H. Pidcoe. Elevation of zero of each gage 583.63 feet, United States Geological Survey datum.

Channel and Control.—The left bank is high, steep and rocky and does not overflow; the right is low but not subject to overflow except during extremely high stages. Bed is composed of rock and gravel. Control is at the remains of an old dam about 500 feet downstream from the gage, where there is a pronounced change in stream slope and where the bed is composed of compact gravel; probably permanent.

Extremes of Discharge.—Maximum stage recorded during the year, 9.00 feet at 2 a. m. June 30 (discharge, about 15,800 second-feet); minimum stage recorded, 2.86 feet at 3 p. m. October 3 (discharge, 40 second-feet).

Ice.—Stage-discharge relation seriously affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 75 and 1,000 second-feet and fairly well defined above and below those limits. Chain gage read to hundredths once daily. Daily discharge ascertained by applying daily mean gage height, computed from automatic water stage recorder graph, to rating table. Results good except for estimated periods and extreme stages, when they may be only fair.

Discharge measurements of Loyalsock Creek at Loyalsock during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
13	Apr. 5	Geo. Weber	4.18	1,200
14	June 19a	do	3.63	515
15	Sept. 2a	do	3.38	278
16	30b	do	3.08	131

a Measurement made by wading 6,500 feet upstream from gage.
b Measurement made by wading 5,200 feet upstream from gage.

Daily Mean Gage Height, in feet, of Loyalsock Creek at Loyalsock, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.87	3.54	4.92	4.27	3.65	3.79	4.66	6.97	3.61	5.77	3.45	3.64
2	2.87	3.54	4.73	4.14	3.81	3.67	4.41	6.02	3.55	4.91	3.42	3.38
3	2.91	4.20	4.80	4.40	3.92	3.65	4.28	5.26	3.50	4.47	3.37	3.32
4	3.31	4.38	4.53	4.28	3.95	3.56	4.20	4.80	3.59	4.27	3.29	3.37
5	3.44	4.34	4.37	4.50	4.06	3.56	4.20	4.53	5.01	4.76	3.26	3.32
6	3.26	4.25	4.27	4.46	4.04	3.49	4.26	4.37	7.49	5.79	3.25	3.25
7	3.16	4.07	4.23	4.32	3.90	3.42	4.35	4.20	6.08	4.85	3.76	3.20
8	3.13	3.96	7.38	4.27	4.07	3.49	5.40	4.08	5.15	4.44	3.57	3.19
9	3.12	3.87	5.89	4.22	4.14	3.43	4.94	3.97	4.94	4.18	3.41	3.17
10	3.14	3.83	5.00	4.16	4.14	3.43	4.59	3.89	5.49	4.04	3.37	3.14
11	3.10	3.80	4.68	3.87	4.06	3.38	4.37	3.81	4.82	4.03	3.30	3.11
12	3.30	3.92	4.56	3.72	3.95	3.40	4.37	3.74	4.47	4.10	3.30	3.08
13	5.11	3.87	4.61	3.69	3.80	3.70	4.32	3.66	4.24	3.93	3.25	3.06
14	4.24	3.77	5.68	3.76	4.00	4.30	4.52	3.62	4.09	4.28	3.19	3.04
15	3.80	3.74	5.18	3.76	5.76	4.23	5.44	3.57	3.98	4.31	3.15	3.02
16	3.60	3.70	5.25	3.69	4.63	4.00	4.81	3.53	3.84	3.87	3.12	3.00
17	3.54	4.89	5.70	3.61	4.31	3.84	4.53	3.51	3.73	3.69	3.11	3.00
18	4.52	6.97	5.00	3.62	4.16	3.80	4.35	3.52	3.65	3.58	3.09	2.98
19	6.91	5.43	4.61	3.60	4.05	3.72	4.21	4.01	3.64	3.52	3.18	3.07
20	6.78	4.85	4.44	3.70	4.00	3.73	4.08	4.66	3.63	3.50	3.18	3.08
21	5.55	4.55	4.32	3.81	3.92	3.67	4.03	4.56	3.62	3.60	3.15	3.14
22	4.93	4.40	4.20	3.77	3.97	3.67	4.66	4.30	3.91	3.58	3.62	3.17
23	4.50	4.25	4.09	3.70	4.08	3.71	5.91	4.28	3.80	3.74	3.50	3.13
24	4.26	4.18	3.99	3.64	4.99	3.95	5.98	4.11	3.70	3.64	3.32	3.07
25	4.06	4.25	3.98	3.90	4.49	5.03	5.27	3.96	3.78	3.49	3.24	3.04
26	3.92	4.10	3.96	3.90	3.98	5.29	4.81	3.87	4.22	3.41	3.23	3.07
27	3.82	4.33	3.85	3.70	4.05	5.26	4.55	3.79	4.65	3.65	3.21	3.13
28	3.74	4.93	3.90	3.64	3.95	4.69	4.86	3.74	4.44	4.45	3.19	3.11
29	3.68	5.13	3.81	3.63	3.85	4.45	4.93	3.68	5.39	3.86	3.19	3.08
30	3.63	4.88	3.87	3.63	-------	4.98	5.94	3.64	7.80	3.63	3.20	3.07
31	3.58	-------	3.96	3.69	-------	5.12	-------	3.68	-------	3.50	3.77	-------

NOTE—Stage-discharge relation Dec. 25-30, Jan. 3-13, 17-23, Jan. 28 to Feb. 14 and Feb. 20-23 affected by ice.

Daily discharge, in second-feet, of Loyalsock Creek at Loyalsock, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	420	2,020	1,090	240	630	1,640	7,290	460	3,750	345	500
2	42	420	1,780	975	280	500	1,280	4,240	420	2,020	324	296
3	53	1,030	1,860	700	340	500	1,150	2,700	380	1,350	289	254
4	247	1,280	1,490	550	420	420	1,030	1,860	460	1,090	234	289
5	338	1,220	1,220	500	460	420	1,030	1,490	2,180	1,780	216	254
6	216	1,090	1,090	550	420	373	1,090	1,220	9,190	3,750	210	210
7	160	865	1,090	650	380	324	1,220	1,030	4,500	1,940	585	180
8	145	765	8,790	700	460	373	2,890	920	2,520	1,350	420	175
9	140	675	3,990	700	800	331	2,100	765	2,100	1,030	317	165
10	150	675	2,180	500	800	331	1,560	720	3,090	865	289	150
11	130	630	1,710	380	650	296	1,220	630	1,860	865	240	135
12	240	720	1,490	380	380	310	1,220	585	1,350	920	240	120
13	2,350	675	1,560	420	280	540	1,150	500	1,090	765	210	110
14	1,090	585	3,520	585	380	1,150	1,420	460	920	1,150	175	100
15	630	585	2,520	585	3,750	1,090	2,890	420	810	1,150	155	90
16	460	540	2,520	540	1,640	810	1,860	420	675	675	140	80
17	420	2,020	3,520	380	1,150	675	1,490	380	585	540	135	80
18	1,420	7,290	2,180	300	975	630	1,220	380	500	460	125	74
19	6,940	2,890	1,560	280	865	540	1,030	810	500	380	170	115
20	6,600	1,940	1,350	340	700	585	920	1,640	500	380	170	120
21	3,300	1,490	1,150	460	600	500	865	1,490	460	460	155	150
22	2,100	1,280	1,030	340	500	500	1,640	1,150	720	460	460	165
23	1,420	1,090	920	300	700	540	3,990	1,150	630	585	380	145
24	1,090	1,030	810	500	2,180	765	4,240	920	540	500	254	115
25	865	1,090	700	720	1,420	2,180	2,700	765	630	373	204	100
26	720	920	600	720	810	2,700	1,860	675	1,030	317	198	115
27	630	1,220	550	540	865	2,700	1,490	630	1,640	500	186	145
28	585	2,100	500	380	765	1,710	1,940	585	1,350	1,350	175	135
29	540	2,350	500	300	675	1,350	2,100	540	2,890	675	175	120
30	500	2,020	550	280	-------	2,180	3,990	500	10,400	500	180	115
31	460	-------	765	240	-------	2,350	-------	540	-------	380	585	-------

NOTE—Discharge Dec. 25-30, Jan. 3-13, 17-23, Jan. 28 to Feb. 14 and Feb. 20-23 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Lycoming Creek near Trout Run and Towanda Creek near Monroeton.

Monthly discharge of Loyalsock Creek at Loyalsock, for the year ending Sept. 30, 1928

(Drainage area 433 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	6,940	42	1,100	2.54	2.93
November	7,290	420	1,360	3.14	3.50
December	8,790	500	1,790	4.13	4.76
January	1,090	240	512	1.18	1.36
February	3,750	240	824	1.90	2.05
March	2,700	296	913	2.11	2.43
April	4,240	865	1,810	4.18	4.66
May	7,290	380	1,210	2.79	3.22
June	10,400	380	1,810	4.18	4.66
July	3,750	317	1,040	2.40	2.77
August	585	125	256	.591	.68
September	500	74	160	.370	.41
The Year	10,400	42	1,060	2.45	33.43

SUSQUEHANNA BASIN—STATION NO. 22

SUSQUEHANNA RIVER AT SUNBURY

Location.—At twenty eight-span steel bridge, Philadelphia & Reading Railway Company, Sunbury, Northumberland County.

Drainage Area.—18,200 square miles.

Records Available.—August 9, 1916, to September 30, 1928.

Gage.—Vertical staff attached to center of downstream end of first pier. Gage consists of a 2 inch plank 24 feet long faced with enameled scales graduated to feet and tenths. Standard chain gage attached to upstream side of bridge December 7, 1927. Staff gage read to half-tenths and chain gage to hundredths twice daily by W. E. Bayler; during high stages more frequently. Elevation of gage zeros 419.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of highway bridge about 3,700 feet downstream from gage.

Channel and Control.—Both banks are high but subject to overflow during extreme floods. Bed is composed of gravel and rock. Control is the remaining portion of the old Shamokin Dam about 6,800 feet downstream from the gage; permanent.

Extremes of Stage.—Maximum gage height during the year, 12.80 feet observed at 7 a. m. October 21; minimum, 0.78 foot from 5 p. m. October 2 to 5 p. m. October 3.

Ice.—Stage-discharge relation usually affected by ice.

Daily Mean Gage Height, in feet, of Susquehanna River at Sunbury, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.84	2.80	8.90	4.35	2.22	3.65	8.30	11.02	2.84	9.60	2.84	1.87
2	.79	2.60	8.35	5.40	2.10	3.60	7.00	12.10	2.80	8.25	2.77	1.75
3	.78	2.50	8.65	5.20	2.10	3.45	6.02	9.98	2.82	6.70	2.63	1.76
4	1.15	3.45	7.40	4.68	2.44	3.03	5.48	7.90	2.64	5.50	2.76	1.84
5	1.85	6.10	6.45	4.08	2.76	2.82	5.23	6.60	3.05	5.30	2.48	1.75
6	1.65	6.80	5.75	3.75	2.75	2.72	5.46	5.85	7.15	8.84	2.62	1.56
7	1.56	6.42	5.32	3.48	3.10	2.60	5.55	5.32	11.72	8.60	2.72	1.51
8	1.58	5.62	6.65	3.55	3.22	2.51	6.00	4.83	9.80	6.65	3.10	1.46
9	1.65	4.90	9.38	3.65	3.83	2.42	7.80	4.48	7.60	5.45	3.33	1.40
10	1.58	4.45	8.92	3.71	4.10	2.35	7.70	4.20	6.90	4.68	3.21	1.41
11	1.48	4.22	7.44	3.75	4.38	2.30	6.55	3.94	7.06	4.63	3.03	1.38
12	1.38	4.00	6.52	3.62	4.33	2.34	5.75	3.62	6.66	4.80	3.14	1.34
13	2.28	4.20	6.15	3.45	3.88	2.60	5.55	3.41	5.64	4.38	3.00	1.30
14	3.42	4.58	7.10	3.35	3.70	3.60	5.75	3.20	4.85	4.58	2.88	1.24
15	3.38	4.35	9.60	3.28	5.35	5.00	6.42	2.97	4.36	5.10	2.58	1.17
16	3.55	4.00	10.20	3.32	6.90	6.00	6.53	2.78	4.04	4.32	2.29	1.10
17	3.20	4.00	9.80	3.32	7.45	5.80	6.21	2.66	3.65	3.95	2.08	1.09
18	3.45	6.85	9.80	3.23	6.10	4.96	5.62	2.64	3.36	3.59	1.98	1.06
19	6.30	9.40	8.15	3.03	5.25	4.45	5.06	2.73	3.09	3.25	1.95	1.08
20	11.30	8.50	6.80	3.07	4.50	3.95	4.65	3.31	3.20	2.97	1.77	1.14
21	12.60	6.95	5.80	3.05	3.74	3.72	4.19	3.77	3.35	3.08	1.74	1.14
22	10.70	5.90	5.32	2.85	3.24	3.58	4.30	4.80	3.86	3.18	1.75	1.19
23	7.88	5.20	4.95	2.80	3.35	3.62	5.90	4.64	4.50	4.00	1.91	1.14
24	6.30	4.80	4.65	2.63	4.35	4.23	8.55	4.40	5.30	3.55	2.09	1.13
25	5.25	4.70	4.31	2.93	5.90	5.50	9.30	4.40	4.70	3.46	2.15	1.13
26	4.58	5.30	3.99	3.60	5.82	8.05	8.30	3.86	4.96	4.10	2.07	1.10
27	4.08	5.95	3.60	3.35	5.20	9.15	7.09	3.46	6.04	3.76	1.98	1.09
28	3.68	6.45	3.40	3.12	4.10	9.55	7.25	3.20	6.10	3.52	1.90	1.06
29	3.40	8.80	3.18	2.90	3.76	8.80	8.00	3.04	5.80	3.42	1.76	1.02
30	3.15	9.75	3.48	2.84	-------	7.75	8.65	3.02	8.65	2.98	1.74	1.01
31	2.98	-------	3.58	2.50	-------	8.60	-------	2.84	-------	2.90	1.73	-------

SUSQUEHANNA BASIN—STATION NO. 23

FRANKSTOWN BRANCH JUNIATA RIVER AT WILLIAMSBURG

Location.—At two-span steel highway bridge, Williamsburg, Blair County.

Drainage Area.—295 square miles.

Records Available.—October 24, 1916, to September 30, 1928.

Gages.—Standard chain attached to upstream side of bridge and automatic water stage recorder installed August 14, 1928, at downstream end of pier. Chain gage read and automatic water stage recorded inspected by R. E. Rhule. Elevation of gage zeros 831.78 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high; left is steep and rocky and does not overflow; right overflows during extremely high stages. Bed is composed of mud, gravel and small boulders. Control for low stages is a water main crossing the stream diagonally about 150 feet downstream from the gage; permanent. Medium and high stage control is at the first of a series of riffles about 450 feet downstream from the water main, probably permanent.

Extremes of Discharge.—Maximum stage during the year, 11.10 feet observed at 8 a. m. May 1 (discharge, 8,210 second-feet); minimum, 1.22 feet from 8 to 11 p. m. September 29 (discharge, 20 second-feet) when the flow was abnormally low, due to operations at the Penn Central Light and Power Company Plant about one-half mile upstream from the gage.

Ice.—Stage-discharge relation rarely affected by ice.

Regulation.—During low flows a part of the stream discharge may be held in storage, temporarily, at some of the dams upstream from the station.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 70 and 2,000 second-feet. Chain gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Chain gage heights used to August 14, 1928; automatic gage charts since that date. Results good except for extremely high stages, when they are fair.

Discharge measurements of Frankstown Branch Juniata River at Williamsburg during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
25	Aug. 15	Geo. Weber	1.75	106

Daily Mean Gage Height, in feet, of Frankstown Branch Juniata River at Williamsburg, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.70	2.38	3.84	2.80	2.58	3.12	5.45	9.72	2.26	4.28	2.34	1.75
2	1.70	2.40	3.66	2.15	2.48	2.85	4.76	7.40	2.30	3.62	2.26	1.71
3	1.85	5.98	3.48	2.32	2.44	2.80	4.45	6.06	2.22	3.92	2.10	1.72
4	2.21	6.60	3.32	2.35	2.50	2.75	5.10	5.21	2.50	3.58	2.04	1.70
5	1.80	5.00	3.14	2.34	4.22	2.75	4.60	4.67	3.31	4.71	2.04	1.67
6	1.72	4.44	3.12	2.44	3.72	2.48	4.35	4.32	3.28	3.90	1.98	1.69
7	1.70	3.88	3.17	2.53	3.46	2.50	4.22	3.92	2.93	3.46	2.03	1.71
8	1.69	3.60	5.36	2.56	3.91	2.50	6.59	3.66	2.70	3.19	2.00	1.72
9	1.69	3.44	4.26	2.53	4.24	2.67	5.42	3.52	3.42	2.96	1.96	1.65
10	1.68	3.30	3.90	2.45	3.69	2.75	4.72	3.36	3.45	3.27	1.94	1.64
11	1.68	3.21	3.80	2.40	3.56	2.63	4.29	3.24	3.00	2.95	2.16	1.63
12	1.90	3.15	4.80	2.42	3.36	2.78	5.41	3.18	2.91	3.55	1.95	1.62
13	3.78	3.00	4.70	2.39	3.10	4.34	4.85	2.99	2.82	4.60	1.87	1.62
14	2.70	2.93	5.50	2.41	3.25	5.28	4.92	2.86	2.72	5.54	1.84	1.63
15	2.36	2.90	4.76	2.40	4.89	4.68	4.77	2.78	2.62	4.25	1.78	1.63
16	2.20	2.83	5.10	2.31	4.55	4.26	4.34	2.72	2.49	3.74	1.80	1.65
17	2.20	2.90	5.00	2.28	4.08	4.02	4.12	2.70	2.41	3.40	1.81	1.63
18	4.90	3.42	4.26	2.28	4.00	3.91	3.84	2.72	2.50	3.14	1.86	1.59
19	7.70	3.00	3.98	2.32	3.59	3.75	3.68	3.00	4.01	2.96	1.91	1.63
20	8.30	2.86	3.70	3.65	3.36	3.51	3.39	3.00	3.20	3.20	1.81	1.96
21	5.61	2.85	3.48	2.15	2.90	3.58	3.35	2.68	3.92	2.78	1.80	1.82
22	4.39	2.86	3.30	2.47	2.90	4.42	4.70	2.66	4.45	2.73	1.87	1.70
23	3.90	2.72	3.16	2.98	3.25	5.40	5.06	2.54	3.90	2.72	1.82	1.82
24	3.43	3.00	2.97	2.90	4.14	5.22	5.68	2.46	3.99	2.43	1.83	1.63
25	3.14	2.94	2.83	4.00	3.40	5.50	5.30	2.43	4.20	2.34	2.13	1.63
26	2.92	2.75	2.66	3.54	3.08	5.58	4.66	2.42	4.50	2.30	1.93	1.64
27	2.78	3.09	2.66	2.95	2.95	5.36	4.40	2.40	4.00	2.27	1.83	1.63
28	2.66	4.18	2.62	2.82	2.90	4.48	6.25	2.39	3.58	2.28	1.80	1.60
29	2.57	4.60	2.67	2.25	3.00	4.30	6.85	2.38	5.69	2.24	1.78	1.43
30	2.49	4.10	2.71	2.46	-------	8.00	8.80	2.35	5.00	2.10	1.75	1.66
31	2.41	-------	2.77	2.55	-------	7.00	-------	2.34	-------	2.09	1.75	-------

NOTE—Stage-discharge relation Jan. 27 to Feb. 3 affected by ice.

Daily discharge, in second-feet, of Frankstown Branch Juniata River at Williamsburg, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	94	237	682	337	180	425	1,520	5,900	204	900	226	103
2	94	237	640	182	190	351	1,160	3,150	215	602	204	96
3	121	1,950	564	215	200	337	950	2,030	193	724	171	98
4	193	2,430	492	226	260	324	1,340	1,400	260	602	160	94
5	112	1,280	425	226	855	324	1,050	1,100	492	1,100	160	88
6	98	950	425	248	640	260	950	900	492	724	146	92
7	94	724	457	272	564	260	855	724	380	564	160	96
8	92	602	1,520	272	724	260	2,430	640	310	457	150	98
9	92	527	900	272	855	297	1,520	564	527	380	142	85
10	90	492	724	248	640	324	1,100	527	527	492	138	88
11	90	457	682	237	602	297	900	457	395	380	182	82
12	130	457	1,160	237	527	337	1,520	457	365	602	140	80
13	682	395	1,100	237	425	900	1,160	395	337	1,050	124	80
14	310	380	1,590	237	457	1,460	1,220	351	310	1,590	119	82
15	226	365	1,160	237	1,220	1,100	1,160	337	284	855	109	82
16	193	351	1,340	215	1,050	900	900	310	260	640	112	85
17	193	365	1,280	215	811	767	811	310	237	527	114	82
18	1,220	527	900	215	767	724	682	310	260	425	123	75
19	3,450	395	767	215	602	682	640	395	767	380	132	82
20	4,110	351	640	602	527	564	527	395	457	457	114	142
21	1,660	351	564	182	365	602	527	310	724	337	112	115
22	950	351	492	248	365	950	1,100	297	950	324	124	94
23	724	310	457	395	457	1,520	1,340	272	724	310	115	115
24	527	395	380	365	811	1,400	1,730	248	767	248	117	82
25	425	380	351	767	527	1,590	1,460	248	855	226	182	82
26	365	324	297	564	425	1,660	1,100	237	1,000	215	136	83
27	337	425	297	360	380	1,520	950	237	767	204	117	82
28	297	855	284	240	365	1,000	2,110	237	602	215	112	77
29	272	1,050	297	190	395	900	2,600	237	1,730	204	109	50
30	260	811	310	180	-------	3,780	4,710	226	1,280	171	103	86
31	237	-------	324	180	-------	2,780	-------	228	-------	171	103	-------

NOTE—Discharge Jan. 27 to Feb. 3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Little Juniata River at Tyrone.

Monthly discharge of Frankstown Branch Juniata River at Williamsburg, for the year ending Sept. 30, 1928

(Drainage area 295 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	4,110	90	572	1.94	2.24
November	2,430	237	624	2.12	2.36
December	1,590	284	694	2.35	2.71
January	767	180	284	.963	1.11
February	1,220	180	558	1.89	2.04
March	3,780	260	922	3.13	3.61
April	4,710	527	1,330	4.51	5.03
May	5,900	226	756	2.56	2.95
June	1,730	193	556	1.88	2.10
July	1,590	171	519	1.76	2.03
August	226	103	137	.464	.53
September	142	50	89.0	.302	.34
The Year	5,900	49	587	1.99	27.05

SUSQUEHANNA BASIN—STATION NO. 24

LITTLE JUNIATA RIVER AT TYRONE

Location.—At single-span steel highway bridge, Pennsylvania Avenue, Tyrone, Blair County.

Drainage Area.—107 square miles.

Records Available.—August 22, 1918, to December 31, 1919, and April 1, 1920, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by H. W. Waple; during high stages more frequently. Elevation of gage zero 877.04 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both sides of the channel are outlined by retaining walls extending upstream and downstream from the bridge. Bed is composed of gravel and rock. Control is at a riffle about 700 feet downstream from the gage. Stage-discharge relation for medium and high stages is affected by backwater from Bald Eagle Creek, which confluences with the Little Juniata about 200 feet downstream from the gage.

Extremes of Stage.—Maximum stage during the year, 6.83 feet observed at 6.15 p. m. June 25; minimum, 1.03 feet at 5.15 p. m. October 11.

Ice.—Stage-discharge relation usually affected by ice.

Flood Warning.—Gage heights obtained at this station are for Flood Warning purposes.

Discharge measurements of Little Juniata River at Tyrone during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
14	Aug. 15	Geo. Weber	1.53	52.8

Daily Mean Gage Height, in feet, of Little Juniata River at Tyrone, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.10	1.84	3.17	2.03	1.85	2.30	3.67	5.09	1.52	3.59	2.32	1.22
2	1.08	1.74	2.96	1.90	1.68	2.14	3.32	4.24	1.65	3.19	1.85	1.20
3	1.13	4.28	2.81	1.84	1.66	1.91	3.17	3.74	1.46	2.94	2.02	1.27
4	1.46	3.98	2.66	1.93	1.67	1.96	3.29	3.45	2.09	2.75	1.76	1.22
5	1.14	3.45	2.46	1.88	2.95	1.92	3.17	3.19	2.99	2.68	1.72	1.29
6	1.14	3.16	2.40	1.96	2.56	1.90	3.03	3.01	3.24	2.53	1.58	1.29
7	1.11	2.86	3.25	2.00	2.51	1.94	3.10	2.76	2.86	2.33	1.64	1.32
8	1.14	2.74	4.30	1.95	3.18	1.94	4.45	2.62	2.79	2.24	1.55	1.29
9	1.12	2.64	3.38	1.94	3.16	1.87	3.80	2.52	3.69	2.12	1.52	1.32
10	1.08	2.50	3.06	1.84	2.84	1.97	3.75	2.40	3.64	2.88	1.72	1.31
11	1.04	2.44	3.15	1.81	2.74	1.92	3.25	2.31	3.17	2.33	1.78	1.30
12	1.68	2.42	3.52	1.78	2.58	2.31	3.51	2.30	2.83	3.59	1.68	1.28
13	2.50	2.32	3.55	1.78	2.49	3.16	3.13	2.15	2.63	3.48	1.58	1.26
14	1.80	2.28	4.00	1.76	2.66	3.50	3.67	1.99	2.44	3.76	1.56	1.24
15	1.60	2.26	3.55	1.79	3.76	3.28	3.53	1.91	2.33	3.28	1.53	1.20
16	1.54	2.28	4.00	1.66	3.16	3.11	3.21	1.87	2.03	2.92	1.50	1.18
17	1.62	2.67	3.65	1.75	2.78	2.94	3.13	1.84	-------	2.63	1.47	1.18
18	3.51	2.65	3.24	1.67	2.74	2.82	2.95	1.88	-------	2.45	1.47	1.18
19	5.12	2.32	2.97	1.87	2.59	2.69	2.81	2.03	-------	2.48	1.47	1.22
20	5.25	2.24	2.80	2.61	2.36	2.57	2.62	1.90	2.10	3.34	1.34	1.49
21	4.00	2.27	2.61	2.26	2.31	2.62	2.61	1.81	3.23	2.63	1.34	1.27
22	3.28	2.24	2.50	2.13	2.06	2.82	3.25	1.76	4.53	2.57	1.44	1.22
23	2.96	2.18	2.39	2.09	2.46	3.28	4.27	1.69	3.68	2.44	1.38	1.24
24	2.70	2.38	2.27	2.05	2.86	3.36	4.15	1.66	3.83	2.26	1.36	1.22
25	2.42	2.37	2.21	2.52	2.42	3.81	3.75	1.63	5.11	2.14	1.90	1.22
26	-------	2.34	2.16	2.13	2.36	4.02	3.47	1.58	4.93	2.08	1.45	1.30
27	-------	2.84	1.91	1.62	2.18	3.88	3.30	1.60	3.78	2.04	1.33	1.20
28	-------	3.44	1.92	1.60	2.13	3.47	4.40	1.68	3.43	2.01	1.30	1.22
29	2.07	3.77	2.01	1.77	2.38	3.29	4.59	1.63	5.29	1.86	1.29	1.22
30	1.98	3.50	2.01	1.66	-------	5.04	4.99	1.62	3.96	1.79	1.26	1.37
31	1.92	-------	2.11	1.75	-------	4.31	-------	1.60	-------	1.71	1.28	-------

NOTE—Gage height Oct. 26-28 and June 17-19 not observed. Stage-discharge relation Jan. 4-8 and Jan. 28 to Feb. 3 affected by ice.

SUSQUEHANNA BASIN—STATION NO. 25

RAYSTOWN BRANCH JUNIATA RIVER AT SAXTON

Location.—At two-span steel highway bridge, Saxton, Bedford County.

Drainage Area.—790 square miles.

Records Available.—August 31, 1911, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by George W. Darr. Elevation of gage zero 789.91 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Banks are high but subject to overflow during extremely high stages. Control was at a heavy boulder riffle 350 feet downstream from the gage until about the first of February 1921, when a new one was formed by the reconstruction of the Huntingdon & Broad Top Mountain Railroad bridge 250 feet downstream from the gage, which was partially washed away during the high flow of November 29, 1921.

Extremes of Discharge.—Maximum stage during the year, 11.14 feet observed at 7 a. m. May 1 (discharge, 18,400 second-feet); minimum, 0.98 foot from 5 p. m. October 2 to 7 a. m. October 3 (discharge, 125 second feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 2,000 second-feet and fairly well defined above. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Raystown Branch Juniata River at Saxton during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
62	Dec. 2	J. M. Snavely	3.11	1,210
63	2	do	3.10	1,220
64	Aug. 13a	Geo. Weber	1.48	257

a Measurement made by wading at railroad bridge 250 feet downstream from gage.

Daily Mean Gage Height, in feet, of Raystown Branch Juniata River at Saxton, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.02	1.86	3.47	2.57	5.20	2.49	4.98	10.71	1.78	3.80	1.88	1.36
2	.99	1.83	3.11	3.90	4.83	2.49	4.61	7.90	1.75	3.51	1.88	1.33
3	1.04	2.80	3.01	3.82	4.63	2.31	4.30	6.20	1.68	3.15	1.92	1.31
4	1.27	5.68	2.87	3.79	4.39	2.24	3.99	5.05	1.88	2.98	1.78	1.35
5	1.15	4.63	2.71	3.94	4.25	2.14	3.81	4.49	2.37	3.09	1.73	1.31
6	1.32	3.89	2.61	3.87	4.73	2.20	3.60	4.04	2.76	2.86	1.61	1.27
7	1.19	3.47	2.65	3.55	3.85	2.01	3.45	3.69	2.53	2.60	1.68	1.23
8	1.16	3.08	4.30	3.27	2.90	2.03	5.12	3.44	2.35	2.33	2.06	1.25
9	1.07	2.92	5.00	2.99	3.26	2.13	5.06	3.22	2.37	2.19	1.97	1.21
10	1.04	2.77	3.99	2.82	3.40	2.24	4.41	3.12	2.49	2.23	1.66	1.22
11	1.04	2.65	3.69	2.17	3.00	2.25	3.99	2.89	2.35	2.39	1.58	1.22
12	1.20	2.53	3.66	1.94	2.87	2.50	4.73	2.79	2.12	3.25	1.49	1.17
13	3.03	2.47	4.24	1.90	2.66	4.31	4.68	2.63	2.08	5.18	1.50	1.19
14	2.75	2.34	4.41	1.87	2.65	4.63	4.43	2.47	2.08	8.80	1.48	1.20
15	1.98	2.29	4.26	1.86	4.40	4.46	4.59	2.36	2.04	5.40	1.41	1.17
16	1.69	2.24	4.12	1.84	4.64	4.12	4.12	2.26	1.90	4.28	1.40	1.17
17	1.61	2.29	4.55	1.80	4.07	3.90	3.81	2.25	1.80	3.64	1.42	1.15
18	2.89	3.10	4.00	1.75	3.87	3.78	3.57	2.25	1.79	3.19	1.40	1.14
19	8.49	3.15	3.67	1.78	3.60	3.69	3.31	2.25	3.98	2.84	1.47	1.18
20	8.20	2.69	3.25	2.21	3.30	3.39	3.12	2.18	5.90	2.75	1.57	1.37
21	6.93	2.57	3.09	2.58	2.89	3.32	2.95	2.19	5.14	2.48	1.51	1.58
22	5.20	2.55	2.97	3.40	2.76	3.83	3.55	2.23	6.55	2.38	1.55	1.71
23	3.81	2.51	2.76	4.45	2.78	5.65	3.97	2.07	5.30	2.43	1.53	1.49
24	3.30	2.35	2.52	4.38	3.34	5.63	4.79	1.96	4.48	2.75	1.48	1.33
25	2.95	2.32	2.84	3.75	3.28	5.19	4.90	1.92	4.10	2.26	1.49	1.26
26	2.60	2.30	4.29	4.40	2.89	4.90	4.45	1.88	4.14	2.05	1.40	1.22
27	2.42	2.16	4.60	5.70	2.65	4.55	4.18	1.91	3.94	1.80	1.43	1.18
28	2.25	2.65	4.65	5.87	2.78	4.11	5.00	1.89	3.55	2.00	1.40	1.32
29	2.16	3.95	3.02	5.98	2.66	3.76	6.43	1.84	3.65	1.98	1.41	1.17
30	2.03	3.74	2.31	5.46	-------	4.30	9.96	1.82	4.20	1.82	1.41	1.31
31	1.95	-------	2.27	5.34	-------	5.76	-------	1.81	-------	1.71	1.43	-------

NOTE—Stage-discharge relation Dec. 25-30, Jan. 1-11 and Jan. 21 to Feb. 7 affected by ice.

Daily discharge, in second-feet, of Raystown Branch Juniata River at Saxton, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	125	350	1,660	550	280	692	3,700	17,100	330	2,030	370	192
2	125	350	1,220	340	300	692	3,100	9,550	312	1,660	370	192
3	132	925	1,120	340	340	565	2,680	6,000	294	1,320	370	180
4	169	5,000	972	420	480	538	2,280	3,700	370	1,120	330	192
5	149	3,100	840	500	1,200	485	2,030	2,960	595	1,220	312	180
6	180	2,150	765	500	1,800	510	1,780	2,280	882	972	262	169
7	158	1,660	802	480	1,300	412	1,550	1,910	728	765	294	169
8	149	1,220	2,680	480	1,020	436	3,850	1,550	595	595	436	169
9	132	1,020	3,700	480	1,440	485	3,850	1,320	595	510	391	158
10	132	882	2,280	460	1,550	538	2,820	1,220	692	538	278	158
11	132	802	1,910	420	1,120	538	2,280	1,020	595	625	262	158
12	158	728	1,910	391	972	692	3,250	925	460	1,320	232	149
13	1,120	658	2,540	370	802	2,680	3,250	802	460	4,000	232	158
14	882	595	2,820	350	802	3,100	2,820	658	460	11,800	232	158
15	412	565	2,680	350	2,820	2,960	3,100	595	436	4,400	204	149
16	294	538	2,410	350	3,100	2,410	2,410	538	370	2,680	204	149
17	262	565	3,100	330	2,410	2,150	2,030	538	330	1,780	204	149
18	1,020	1,220	2,280	312	2,150	2,030	1,780	538	330	1,320	204	149
19	11,000	1,320	1,910	330	1,780	1,910	1,440	538	2,280	972	218	158
20	10,300	840	1,320	510	1,440	1,550	1,220	510	5,400	882	247	192
21	7,400	728	1,220	300	1,020	1,440	1,070	510	3,850	692	232	262
22	4,000	728	1,070	380	882	2,030	1,780	538	6,800	625	247	294
23	2,030	692	882	650	925	4,800	2,280	436	4,200	658	247	282
24	1,440	595	692	700	1,440	4,800	3,400	391	2,960	882	232	192
25	1,070	565	600	1,400	1,440	4,000	3,550	370	2,410	538	232	169
26	765	565	500	1,100	1,020	3,550	2,820	370	2,410	436	204	158
27	625	485	480	700	802	3,100	2,540	370	2,150	330	218	158
28	538	802	480	460	925	2,410	3,700	370	1,780	412	204	180
29	485	2,280	480	360	802	2,030	6,400	350	1,780	412	204	149
30	436	1,910	500	300	------	2,680	5,000	330	2,540	330	204	180
31	391	------	538	280	------	5,200	-------	330	-------	294	218	-------

NOTE—Discharge Dec. 25-30, Jan. 1-11 and Jan. 21 to Feb. 7 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Frankstown Branch Juniata River at Williamsburg.

Monthly discharge of Raystown Branch Juniata River at Saxton, for the year ending Sept. 30, 1928

(Drainage area 790 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	11,000	125	1,490	1.89	2.18
November	5,000	350	1,130	1.43	1.60
December	3,700	480	1,500	1.90	2.19
January	1,400	280	480	.608	.70
February	3,100	280	1,250	1.58	1.70
March	5,200	412	1,980	2.51	2.89
April	15,000	1,070	3,130	3.96	4.42
May	17,100	330	1,890	2.39	2.76
June	6,800	294	1,580	2.00	2.23
July	11,800	294	1,490	1.89	2.18
August	436	204	261	.330	.38
September	294	149	177	.224	.25
The Year	17,100	125	1,360	1.72	23.48

SUSQUEHANNA BASIN—STATION NO. 26

TUSCARORA CREEK NEAR PORT ROYAL

Location.—At single-span steel highway bridge about two miles southwest of Port Royal, Juniata County.

Drainage Area.—205 square miles.

Records Available.—August 21, 1911, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by Stuart Groninger.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are low but not subject to overflow, except during extremely high stages. Bed is composed of gravel and rocks. Control for all except extremely low stages was changed on July 10, 1928, when an unusual rainfall on a small area washed a large amount of gravel into the stream at its right edge, about 300 feet downstream from the gage.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 11.10 feet at midnight October 19-20 (discharge, 7,020 second-feet); minimum, 1.87 feet at 5 p. m. September 27 (discharge, 4.6 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—The operation of grist mills above the station causes variation in stage during low flows.

Accuracy.—Stage-discharge relation was changed on July 10, 1928, and affected by ice. Two rating tables were used: that applicable to July 10, was well defined below 5,000 second-feet; the one subsequent to that date, well defined below 3,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages, when they may be only fair.

Discharge measurements of Tuscarora Creek near Port Royal during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
39	Aug. 16	Geo. Weber	2.60	68.6

Measurement made by wading 400 feet downstream from gage.

Daily Mean Gage Height, in feet, of Tuscarora Creek near Port Royal, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.30	3.08	3.78	3.40	3.76	3.47	4.98	9.15	2.82	4.82	3.04	2.48
2	2.28	3.06	3.64	3.78	3.59	3.34	4.57	6.70	2.82	4.25	3.10	2.40
3	2.34	3.26	4.22	3.60	3.54	3.22	4.28	5.72	2.75	3.90	2.92	2.50
4	4.54	4.48	3.84	3.45	3.38	3.10	4.30	5.18	2.82	4.18	2.83	2.42
5	3.65	3.88	3.81	3.29	4.28	3.16	4.00	4.80	3.48	4.50	2.84	2.39
6	3.02	3.64	3.90	3.24	4.65	2.96	3.86	4.50	3.78	3.90	2.88	2.36
7	2.77	3.42	4.02	3.33	4.24	2.94	3.75	4.21	3.36	3.49	2.82	2.42
8	2.70	3.28	5.69	3.37	4.20	2.92	6.38	4.08	3.06	3.30	3.28	2.43
9	2.68	3.26	4.86	3.45	4.52	2.95	5.38	3.86	3.10	3.18	3.29	2.39
10	2.58	3.24	4.26	3.40	3.90	3.01	4.77	3.76	3.10	3.23	3.00	2.42
11	2.52	3.15	4.21	3.14	3.65	3.07	4.45	3.65	2.90	4.15	2.85	2.34
12	3.42	3.14	4.26	2.99	3.58	3.04	5.15	3.59	2.80	4.46	2.77	2.34
13	7.24	3.05	4.20	2.98	3.45	3.92	4.84	3.42	2.76	4.48	2.76	2.30
14	4.60	2.94	4.82	2.97	4.16	5.13	4.98	3.32	2.76	6.15	2.68	2.23
15	3.88	2.94	4.34	2.93	6.62	4.68	5.02	3.25	2.72	5.05	2.61	2.44
16	3.50	2.92	4.83	2.91	5.00	4.24	4.62	3.19	2.66	4.24	2.56	2.30
17	3.83	4.80	5.66	2.84	4.48	4.08	4.38	3.17	2.61	3.76	2.55	2.39
18	7.35	7.66	4.86	2.84	4.28	4.15	4.15	3.14	2.65	3.52	2.58	2.28
19	10.32	5.30	4.40	2.89	3.97	4.06	3.98	3.22	2.73	3.82	2.58	2.29
20	9.28	4.54	4.18	3.93	3.80	3.85	3.80	3.85	3.03	4.52	2.56	2.80
21	6.12	4.25	4.00	3.28	3.42	3.90	3.78	3.56	2.90	3.75	2.44	3.08
22	5.08	4.15	3.80	3.80	3.26	4.52	4.65	3.29	4.50	3.68	2.57	2.64
23	4.56	3.90	3.68	4.77	4.22	5.80	4.82	3.18	4.10	5.51	2.56	2.65
24	4.20	3.82	3.52	4.62	4.94	5.87	5.32	3.10	3.62	4.25	2.54	2.40
25	3.91	3.82	3.20	4.48	4.19	5.38	4.96	3.02	4.18	3.72	2.61	2.38
26	3.72	3.60	3.08	3.83	3.72	4.93	4.48	2.99	4.62	3.45	2.61	2.37
27	3.56	3.58	3.06	3.44	3.70	4.62	4.30	2.96	4.34	3.54	2.56	1.94
28	3.46	3.82	3.01	3.40	3.71	4.28	6.00	2.92	3.90	3.71	2.54	2.30
29	3.34	4.08	3.34	3.10	3.60	4.08	7.94	2.94	5.32	3.22	2.49	2.30
30	3.26	3.88	3.36	3.70	-------	5.64	9.70	2.90	6.02	3.06	2.56	2.45
31	3.15	-------	3.31	3.86	-------	5.69	-------	2.92	-------	2.97	2.60	-------

NOTE—Stage-discharge relation Dec. 29 to Jan. 10, Jan. 22-25 and Jan. 30 to Feb. 8 affected by ice.

Daily discharge, in second-feet, of Tuscarora Creek near Port Royal, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	37	160	350	180	95	242	950	4,820	106	835	134	53
2	35	150	300	160	95	218	725	2,220	106	535	144	43
3	42	192	510	100	100	180	560	1,420	95	385	111	55
4	670	670	368	110	130	160	560	1,080	106	510	98	45
5	300	385	350	140	260	170	425	835	255	670	99	42
6	140	300	385	160	420	132	368	670	350	385	105	39
7	98	230	425	170	360	128	332	510	218	255	96	45
8	87	205	1,420	180	380	124	1,950	465	150	205	186	47
9	84	192	890	190	670	130	1,210	368	160	180	186	42
10	71	192	535	190	385	140	835	332	160	192	124	45
11	63	170	510	170	300	150	642	300	120	426	100	37
12	230	170	535	138	285	150	1,080	285	103	548	89	37
13	2,660	150	510	136	242	385	835	230	97	570	87	33
14	725	128	835	134	488	1,020	950	205	97	1,580	77	26
15	385	128	588	126	2,120	780	950	192	90	820	68	48
16	255	124	835	122	950	535	725	180	81	464	62	33
17	368	835	1,420	110	670	465	615	170	74	296	61	42
18	2,850	3,150	890	110	560	488	488	170	80	232	65	31
19	6,050	1,140	615	118	405	445	425	180	92	310	65	32
20	4,880	670	510	405	350	368	350	368	150	570	62	93
21	1,720	535	425	205	230	385	350	270	120	296	48	144
22	1,020	488	350	120	192	670	725	205	670	282	63	72
23	725	385	315	220	510	1,490	835	180	465	1,110	62	73
24	510	350	255	240	890	1,560	1,140	160	265	464	60	43
25	385	350	180	460	510	1,210	950	140	510	282	68	41
26	315	285	160	368	315	890	670	138	725	220	68	40
27	270	285	150	242	315	725	560	132	588	244	62	6.6
28	242	350	140	230	315	560	1,640	124	385	282	60	33
29	218	465	140	160	285	465	3,350	128	1,140	164	54	33
30	192	385	130	100	-------	1,340	5,480	120	1,640	134	62	49
31	170	-------	150	95	-------	1,420	-------	124	-------	119	67	------

NOTE—Discharge Dec. 29 to Jan. 10, 22-25 and Jan. 30 to Feb. 8 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Frankstown Branch Juniata River at Williamsburg and Raystown Branch Juniata River at Saxton.

Monthly discharge of Tuscarora Creek near Port Royal, for the year ending Sept. 30, 1928

(Drainage area 205 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	6,050	35	832	4.06	4.68
November	3,150	124	441	2.15	2.40
December	1,420	130	490	2.39	2.76
January	460	95	180	.878	1.01
February	2,120	95	442	2.16	2.33
March	1,560	124	552	2.69	3.10
April	5,480	332	1,020	4.98	5.56
May	4,820	120	539	2.63	3.03
June	1,640	74	307	1.50	1.67
July	1,580	119	438	2.14	2.47
August	186	48	86.9	.424	.49
September	144	6.6	46.8	.228	.25
The Year	6,050	6.6	448	2.19	29.75

SUSQUEHANNA BASIN—STATION NO. 27

JUNIATA RIVER AT NEWPORT

Location.—At four-span steel highway bridge, Newport, Perry County.

Drainage Area.—3,380 square miles.

Records Available.—March 21, 1899, to July 14, 1906, and January 7, 1907, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by A. R. Bortel. Elevation of gage zero 363.32 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of hard material. Low-water control is at a riffle about 400 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 17.60 feet at 10 p. m. May 1 (discharge, 58,800 second-feet); minimum, 3.02 feet at 6 p. m. September 18 (discharge, 640 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined from 400 to 70,000 second-feet. Gage read twice daily to quarter-tenths; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Juniata River at Newport during the year ending Sept. 30, 1298

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
97	Apr. 10	J. M. Snavely	7.92	14,900

Daily Mean Gage Height, in feet, of Juniata River at Newport, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.11	4.12	5.80	4.50	4.05	4.57	9.32	16.92	3.85	7.42	3.96	3.36
2	3.12	4.18	5.64	4.40	4.25	4.67	7.97	15.75	3.90	6.45	4.01	3.30
3	3.14	4.12	5.60	4.35	4.15	4.39	6.97	11.90	3.70	5.75	3.94	3.34
4	3.80	5.75	5.42	5.75	4.15	4.17	6.59	9.38	3.71	5.55	3.91	3.24
5	4.35	7.52	5.24	5.70	4.50	4.22	6.57	7.90	3.95	5.65	3.81	3.23
6	3.98	6.80	5.08	6.42	4.95	4.02	6.09	6.90	5.30	5.68	3.74	3.30
7	3.80	6.00	5.08	6.70	5.00	4.15	5.77	6.38	5.05	5.25	3.51	3.23
8	3.40	5.50	6.45	8.10	4.55	3.97	7.12	5.86	4.68	4.95	3.76	3.17
9	3.50	5.18	7.93	8.69	5.15	3.97	8.97	5.58	4.45	4.65	4.16	3.13
10	3.35	5.00	7.42	5.25	5.32	3.99	7.94	5.34	4.98	4.62	4.04	3.34
11	3.23	4.88	6.55	4.10	5.10	4.05	7.00	5.14	5.50	6.00	3.86	3.16
12	3.44	4.70	6.12	4.12	4.90	4.12	6.85	4.88	4.70	5.75	3.91	3.22
13	6.45	4.62	6.22	4.00	4.72	4.34	7.22	4.82	4.42	6.20	3.71	3.16
14	6.58	4.59	6.72	4.00	4.75	6.08	7.12	4.70	4.42	8.05	3.54	3.15
15	5.35	4.28	7.20	4.00	6.56	7.02	7.30	4.54	4.15	10.36	3.58	3.11
16	4.65	4.25	6.92	4.02	6.77	6 52	7.02	4.39	4.05	7.89	3.50	3.12
17	4.48	4.80	7.96	3.79	6.67	5 97	6.46	4.25	-------	6.20	3.54	3.13
18	5.70	7.93	7.60	4.00	6.05	5.82	6.05	4.30	3.90	5.58	3.46	3.09
19	10.75	6.95	6.75	3.92	5.64	5.65	5.75	4.18	4.00	5.20	3.41	3.06
20	15.46	5.92	6.05	4.38	5.37	5.42	5.45	4.40	4.15	5.95	3.48	3.23
21	12.80	5.42	5.70	4.88	4.97	5.27	5.18	4.48	5.90	5.68	3.41	3.24
22	9.35	5.26	5.48	4.40	4.67	5.52	5.58	4.40	6.17	5.20	3.51	3.29
23	7.35	4.98	-------	4.18	4.97	6.77	6.80	4.44	8.16	5.56	3.51	3.26
24	6.30	4.88	5.08	4.32	5.49	8.17	7.65	4.32	7.15	5.40	3.44	3.25
25	5.62	4.88	4.75	4.65	5.47	8.39	7.90	4.10	6.45	4.75	3.38	3.15
26	5.20	4.95	4.50	4.85	5.29	7.97	7.58	4.00	6.95	4.56	3.46	3.21
27	4.85	4.60	4.50	4.95	4.89	7.57	6.97	3.92	7.28	4.38	3.61	3.17
28	4.70	4.88	4.45	4.92	4.72	7.07	8.80	4.02	6.40	4.48	3.38	3.11
29	4.55	5.35	4.28	4.52	4.61	6.39	11.85	3.75	7.10	4.38	3.46	3.10
30	4.38	5.80	4.32	4.10	-------	7.47	14.40	4.05	8.35	4.16	3.38	3.14
31	4.24	-------	4.45	3.85	-------	10.32	-------	3.95	-------	4.06	3.36	-------

NOTE—Gage height Dec. 23 and June 17 not observed. Stage-discharge relation Jan. 3-9, 22 and 23 affected by ice.

Daily discharge, in second-feet, of Juniata River at Newport, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	775	2,880	8,080	4,020	2,750	4,320	20,600	55,200	2,250	13,500	2,500	1,190
2	790	3,150	7,440	3,720	3,290	4,620	15,800	49,500	2,370	10,000	2,620	1,080
3	820	2,880	7,440	2,200	3,020	3,720	12,100	31,400	1,900	8,080	2,500	1,160
4	2,130	8,080	6,800	2,600	3,020	3,020	10,700	21,000	1,900	7,440	2,370	978
5	3,580	13,900	6,170	3,800	4,020	3,150	10,700	15,400	2,500	7,440	2,130	961
6	2,620	11,400	5.860	3,800	5,550	2,620	9,040	11,800	6,480	7,760	2,020	1,080
7	2,130	8,720	5,860	3,400	5,550	3,02(	8,080	10,000	5,550	6,170	1,470	961
8	1,270	7,120	10,000	3,600	4,320	2,50(	12,500	8,400	4,620	5,550	2,020	865
9	1,470	6,170	15,400	4,000	6,170	2,50(	19,500	7,440	3,870	4,320	3,020	805
10	1,180	5,550	13,500	6,170	6,480	2,62(	15,400	6,480	5,550	4,320	2,750	1,160
11	961	5,240	10,700	2.880	5,860	2,750	12,100	5,860	7,120	8,720	2,250	850
12	1,350	4,620	9,040	2,880	5,240	2,88(	11,400	5,240	4,620	8,080	2,370	944
13	10,000	4,320	9,360	2,620	4,620	3,580	12,800	4,930	3,720	9,360	1,900	850
14	10,700	4,320	11,000	2,620	4,930	9,040	12,500	4,620	3,720	15,800	1,580	835
15	6,800	3,430	12,800	2,620	10,700	12,100	13,200	4,020	3,020	25,100	1,680	775
16	4,320	3,290	11,800	2,620	11,400	10,400	12,100	3,720	2,750	15,400	1,470	790
17	4,020	4,930	15,800	2,130	11,000	8,720	10,400	3,290	2,400	9,360	1,580	805
18	7,760	15,400	14,300	2,620	8,720	8,080	8,720	3,430	2,370	7,440	1,390	745
19	26,700	12,100	11,400	2,370	7,440	7,440	8,080	3,150	2,620	6,170	1,290	700
20	48,000	8,400	8,720	3,720	6,800	6,800	6,800	3,720	3,020	8,720	1,430	961
21	35,300	6,800	7,760	5,240	5,550	6,480	6,170	4,020	8,400	7,760	1,290	978
22	21,000	6,480	7,120	2,600	4,620	7,120	7,440	3,720	9,360	6,170	1,470	1,060
23	13,500	5,550	6,500	2,600	5,550	11,400	11,400	3,870	16,500	7,440	1,470	1,010
24	9,690	5,240	5,860	3,430	7,120	16,500	14,300	3,430	12,800	6,800	1,350	995
25	7,440	5,240	4,930	4,320	7,120	17,200	15,400	2,880	10,000	4,930	1,230	835
26	6,170	5,550	4,020	4,930	6,480	15,800	14,300	2,620	12,100	4,320	1,390	927
27	4,930	4,320	4,020	5,550	5,240	14,300	12,100	2,370	13,200	3,720	1,680	865
28	4,620	5,240	3,870	5,240	4,620	12,500	18,700	2,62(	10,000	4,020	1,230	775
29	4,320	6,800	3,430	4,020	4,320	10,000	31,000	2,020	12,500	3,720	1,390	760
30	3,720	8,080	3,430	2,880	-------	13,900	42,600	2,750	17,200	3,020	1,230	820
31	3,290	-------	3,870	2,250	-------	24,600	-------	2,500	-------	2,750	1,190	-------

NOTE—Discharge estimated Dec. 23 and June 17, because of no gage height record, and Jan. 3-9, 22 and 23, because of ice, from weather records, study of gage height graph and comparison with similar studies for Frankstown Branch Juniata River at Williamsburg and Susquehanna River at Harrisburg.

Monthly discharge of Juniata River at Newport, for the year ending Sept. 30, 1928

(Drainage area 3,380 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	48,000	775	8,110	2.40	2.77
November	15,400	2,880	6,510	1.93	2.15
December	15,800	3,430	8,270	2.45	2.82
January	6,170	2,130	3,470	1.03	1.19
February	11,400	2,750	5,910	1.75	1.89
March	24,600	2,500	8,180	2.42	2.79
April	42,600	6,170	13,900	4.11	4.59
May	55,200	2,020	9,400	2.78	3.20
June	17,200	1,900	6,480	1.92	2.14
July	25,100	2,750	7,850	2.32	2.68
August	3,020	1,190	1,780	.527	.61
September	1,190	700	917	.271	.30
The Year	55,200	700	6,730	1.99	27.13

SUSQUEHANNA BASIN—STATION NO. 28

SUSQUEHANNA RIVER AT HARRISBURG

Location.—At fifteen-span steel highway bridge, Walnut Street, Harrisburg, Dauphin County.

Drainage Area.—24,100 square miles.

Records Available.—October 1, 1890, to September 30, 1928.

Gages.—Standard chain attached to upstream side of bridge; read by employes of the Department of Forests and Waters and United States Weather Bureau. Automatic water stage recorder, installed June 15, 1928, in base of column, downstream corner of left abutment Market Street Bridge, about 540 feet downstream from the chain gage; inspected by employes of Department of Forests and Waters. Elevation of gage zeros 289.4 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading and from boat.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and boulders. A low dam 4,200 feet downstream from the gage, completed on August 29, 1916, is the control for all except high stages.

Extremes of Discharge.—Maximum stage during the year, 14.65 feet at 7.30 a. m. May 2 (discharge, 252,400 second-feet); minimum 3.26 feet at 8 a. m. October 3 (discharge, 4,640 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage discharge relation permanent except when affected by ice. Rating curve well defined between 4,000 and 300,000 second-feet. Chain gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying to rating table daily mean gage height, computed from a continuous hydrograph, obtained by plotting gage readings to June 14, 1928. From June 15, 1928, daily discharge obtained by applying to rating daily mean gage height, obtained from water stage recorder graph. Results good.

Daily Mean Gage Height, in feet, of Susquehanna River at Harrisburg, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.27	4.60	9.80	4.96	7.56	5.17	10.09	12.71	4.50	10.93	4.55	3.79
2	3.27	4.48	9.10	5.10	7.22	5.18	8.87	14.38	4.48	9.79	4.49	3.82
3	3.26	4.44	9.50	5.66	7.07	5.08	7.71	12.58	4.46	7.65	4.46	3.85
4	3.57	4.58	8.90	5.46	7.26	4.90	7.00	10.20	4.41	7.22	4.44	3.83
5	3.83	6.20	7.69	5.20	7.65	4.72	6.64	8.46	4.44	6.65	4.48	3.83
6	4.08	7.61	7.07	5.00	7.85	4.52	6.56	7.58	5.29	8.34	4.26	3.81
7	3.83	7.40	6.70	5.00	7.57	4.47	6.58	6.90	10.55	9.84	4.31	3.75
8	3.75	6.89	6.77	5.04	7.87	4.45	6.88	6.40	11.11	7.76	4.36	3.65
9	3.71	6.33	9.56	5.04	8.16	4.38	8.50	6.05	8.82	6.93	4.72	3.62
10	3.74	5.91	10.22	5.14	8.45	4.30	9.10	5.82	7.68	6.12	4.81	3.58
11	3.72	5.56	8.96	5.07	8.22	4.31	8.23	5.58	7.63	6.02	4.69	3.59
12	3.68	5.38	7.90	5.00	8.28	4.25	7.41	5.38	7.59	6.00	4.66	3.54
13	4.50	5.29	7.30	4.97	7.80	4.30	7.19	5.23	6.89	6.16	4.61	3.54
14	5.40	5.50	7.46	4.86	7.50	4.90	7.09	5.00	6.20	6.22	4.54	3.53
15	5.30	5.58	9.30	4.80	8.02	5.90	7.57	4.82	5.74	6.88	4.42	3.48
16	5.10	5.41	10.60	4.76	7.83	7.23	7.92	4.74	5.44	6.55	4.24	3.45
17	5.09	5.33	10.50	4.82	8.38	7.20	7.52	4.62	5.12	5.81	4.13	3.43
18	5.30	7.42	10.80	4.76	7.80	6.70	7.10	4.54	4.95	5.43	4.04	3.40
19	7.05	9.67	9.70	4.71	6.71	6.10	6.61	4.52	4.84	5.14	3.98	3.39
20	12.40	9.98	8.17	4.72	6.12	5.72	6.22	4.88	4.78	5.05	3.89	3.40
21	14.40	8.40	7.25	4.75	5.72	5.43	5.90	5.08	4.97	4.98	3.85	3.47
22	12.98	7.30	6.65	5.05	5.24	5.35	5.75	5.40	5.35	4.94	3.83	3.52
23	10.14	6.63	6.28	4.94	5.30	5.56	6.34	5.87	5.99	5.22	3.85	3.50
24	8.01	6.19	5.93	4.94	5.58	6.19	8.48	5.72	6.26	5.45	3.86	3.48
25	6.90	5.95	5.58	4.71	6.40	6.55	10.14	5.50	6.33	5.05	3.95	3.44
26	6.25	5.90	5.38	4.92	6.90	8.00	9.80	5.40	6.52	5.01	3.99	3.42
27	5.70	6.67	5.18	5.33	6.30	9.60	8.72	5.07	7.15	5.32	3.98	3.40
28	5.43	6.77	5.01	5.30	5.89	10.12	8.87	4.86	7.64	5.08	3.95	3.39
29	5.13	8.20	4.88	5.78	5.47	9.91	10.60	4.71	7.63	4.93	3.85	3.39
30	4.98	9.97	4.92	7.41	-------	8.93	11.38	4.62	9.12	4.87	3.84	3.39
31	4.80	-------	5.02	7.64	-------	9.88	-------	4.52	-------	4.60	3.83	-------

NOTE—Stage-discharge relation Jan. 20 to Feb. 16 affected by ice.

Daily discharge, in second-feet, of Susquehanna River at Harrisburg, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,730	22,500	131,400	29,300	18,000	33,000	138,300	200,200	20,900	156,700	22,500	10,900
2	4,730	20,900	115,700	31,100	16,000	33,000	111,300	246,700	20,900	131,400	20,900	10,900
3	4,640	20,200	124,500	42,600	15,000	31,100	84,900	197,600	20,200	82,700	20,200	11,600
4	7,700	22,500	111,300	38,700	17,000	27,500	69,500	140,600	19,400	73,900	20,200	11,600
5	11,600	52,600	84,900	33,000	20,000	24,100	61,000	102,500	20,200	61,000	20,900	11,600
6	15,000	82,700	71,700	29,300	26,000	20,900	61,000	82,700	34,900	98,100	17,200	10,900
7	11,600	78,300	63,100	29,300	30,000	20,200	61,000	67,300	149,800	131,400	17,900	10,200
8	10,200	67,300	65,200	29,300	34,000	20,200	67,300	56,800	161,300	87,100	18,600	8,950
9	9,600	54,700	126,800	29,300	40,000	19,400	102,500	48,600	109,100	67,300	24,100	8,300
10	10,200	46,600	140,600	31,100	44,000	17,900	115,700	44,600	84,900	50,600	25,800	8,300
11	9,600	40,600	113,500	31,100	42,000	17,900	95,900	40,600	82,700	48,600	24,100	8,300
12	9,600	36,800	89,300	29,300	40,000	17,200	78,300	36,800	82,700	48,600	24,100	7,700
13	20,900	34,900	76,100	29,300	40,000	17,900	73,900	33,000	67,300	52,600	22,500	7,700
14	36,800	38,700	80,500	27,500	38,000	27,500	71,700	29,300	52,600	52,600	20,900	7,700
15	34,900	40,600	120,100	25,800	49,000	46,600	82,700	25,800	42,600	67,300	19,400	6,880
16	31,100	36,800	149,800	25,800	65,000	73,900	89,300	24,100	36,800	61,000	17,200	6,550
17	31,100	34,900	147,500	25,800	100,300	73,900	80,500	22,500	31,100	44,600	15,700	6,330
18	34,900	78,300	154,400	25,800	87,100	63,100	71,700	20,900	29,300	36,800	14,300	6,000
19	69,500	129,100	129,100	24,100	63,100	50,600	61,000	20,900	25,800	31,100	13,600	5,900
20	192,500	136,000	95,900	22,000	50,600	42,600	52,600	27,500	25,800	29,300	12,200	6,000
21	246,700	100,300	73,900	20,000	42,600	36,800	46,600	29,300	29,300	29,300	11,600	6,770
22	208,000	76,100	61,000	19,000	33,000	36,800	44,600	36,800	36,800	27,500	11,600	7,100
23	138,300	61,000	54,700	19,000	34,900	40,600	54,700	46,600	48,600	33,000	11,600	7,100
24	91,500	52,600	46,600	20,000	40,600	52,600	102,500	42,600	54,700	36,800	11,600	6,880
25	67,300	48,600	40,600	22,000	56,800	61,000	138,300	38,700	54,700	29,300	12,900	6,440
26	52,600	46,600	36,800	26,000	67,300	91,500	131,400	36,800	58,900	29,300	13,600	6,220
27	42,600	63,100	33,000	30,000	54,700	126,800	106,900	31,100	73,900	34,900	13,600	6,000
28	36,800	65,200	29,300	30,000	46,600	138,300	111,300	27,500	82,700	31,100	12,900	5,900
29	31,100	95,900	27,500	28,000	38,700	133,700	149,800	24,100	82,700	27,500	11,600	5,900
30	29,300	136,000	27,500	24,000	-------	111,300	168,200	22,500	115,700	27,500	11,600	5,900
31	25,800	-------	29,300	20,000	-------	133,700	-------	20,900	-------	22,500	11,600	-------

study of gage height graph, discharge of Susquehanna River at Sunbury and Holtwood and Juniata River at Newport, and relation between step and chain gages at Harrisburg.

NOTE—Discharge Jan. 20 to Feb. 16, estimated, because of ice, from weather records,

Monthly discharge of Susquehanna River at Harrisburg, for the year ending Sept. 30, 1928

(Drainage area 24,100 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	246,700	4,640	49,400	2.05	2.36
November	136,000	20,200	60,700	2.52	2.81
December	154,400	27,500	85,500	3.55	4.09
January	42,600	19,000	27,300	1.13	1.30
February	100,300	15,000	42,800	1.78	1.92
March	138,300	17,200	53,000	2.20	2.54
April	168,200	44,600	89,500	3.71	4.14
May	246,700	20,900	58,900	2.44	2.81
June	161,300	19,400	58,500	2.43	2.71
July	156,700	22,500	56,200	2.33	2.69
August	25,800	11,600	17,000	.705	.81
September	11,600	5,900	7,880	.327	.36
The Year	246,700	4,640	50,600	2.10	28.54

SUSQUEHANNA BASIN—STATION NO. 29

LITTLE SWATARA CREEK NEAR PINE GROVE

Location.—At single-span steel highway bridge, about three-quarters of a mile upstream from mouth of creek and one mile southeast of Pine Grove, Schuylkill County.

Drainage Area.—34 square miles.

Records Available.—November 18, 1919, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by Lottie Mars.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are of medium height; overflow begins on the right side of the bridge at a stage of 6.7 feet and on the left side at 6.5 feet. The bed is composed of coarse gravel at the gage and control section. The stream is divided by an island 60 feet long, about 200 feet downstream from the gage. Control for the right channel is at the upstream end of the island, and for the left channel at the downstream end. The left channel control was materially changed by a deposit of gravel during the high flow of September 30, 1924.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.30 feet at noon June 30 (discharge, about 1,070 second-feet); minimum, 1.18 feet at 5.30 p. m. October 2 and 3 (discharge, 3.3 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation affected by ice and changed on June 30, 1928. Two rating tables used; one applicable to June 30 and the other subsequent to that date; rating curves well defined below 100 second-feet and fairly well defined between 100 and 500 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages, when they are fair.

Daily Mean Gage Height, in feet, of Little Swatara Creek near Pine Grove, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.20	1.73	1.88	2.11	2.19	2.00	2.49	3.23	1.54	3.38	1.40	1.35
2	1.18	1.70	2.28	2.30	2.16	1.90	2.30	2.79	1.52	2.80	1.38	1.35
3	1.30	1.70	2.72	2.72	2.13	1.85	2.17	2.55	1.48	2.54	1.36	1.77
4	2.64	1.82	2.50	2.61	2.12	1.84	2.07	2.39	1.48	2.42	1.34	1.52
5	2.06	1.72	2.38	2.50	2.87	1.74	2.01	2.30	1.70	3.00	1.52	1.45
6	1.80	1.69	2.26	2.28	3.32	1.65	1.96	2.33	2.51	2.69	1.66	1.49
7	1.68	1.62	2.55	2.18	3.20	1.64	1.87	2.11	2.19	2.34	2.18	1.55
8	1.66	1.60	3.92	2.09	3.02	1.65	1.98	2.02	2.02	2.17	1.74	1.47
9	1.58	1.60	3.06	2.11	2.63	1.59	1.83	1.98	2.14	2.03	1.60	1.42
10	1.52	1.56	2.65	1.81	2.22	1.72	1.78	1.93	2.03	1.96	1.52	1.43
11	1.50	1.56	2.52	1.74	2.07	1.63	1.77	1.87	1.92	1.88	2.14	1.39
12	1.60	1.54	2.48	1.71	1.97	1.70	2.15	1.85	1.86	1.86	1.82	1.37
13	3.30	1.51	2.42	1.72	1.83	2.05	1.91	1.76	1.82	1.85	1.64	1.38
14	2.64	1.50	2.64	1.73	2.07	2.17	2.23	1.72	1.92	2.12	1.58	1.40
15	2.21	1.50	2.54	1.70	2.97	2.03	2.35	1.68	1.94	1.79	1.51	1.35
16	2.06	1.50	2.66	1.64	2.47	1.95	2.22	1.66	1.81	1.74	1.50	1.34
17	2.47	2.00	2.80	1.70	2.32	1.91	2.13	1.66	1.76	1.66	1.63	1.36
18	2.98	3.42	2.58	1.69	2.27	2.02	2.03	1.62	1.76	1.61	1.55	1.33
19	4.55	2.66	2.38	1.77	2.13	1.97	1.97	1.75	1.92	1.60	1.49	1.35
20	4.04	2.36	2.26	2.50	1.99	1.92	1.90	2.24	1.71	1.58	1.43	1.48
21	3.07	2.24	2.18	2.32	2.01	1.95	1.85	1.90	1.76	1.54	1.41	1.41
22	2.70	2.16	2.08	2.39	1.99	2.17	2.29	1.84	2.31	1.55	1.64	1.35
23	2.47	2.08	2.00	2.43	3.82	2.58	2.27	1.78	2.20	1.54	1.43	1.38
24	2.29	2.04	1.91	2.24	3.07	2.57	2.45	1.72	2.31	1.51	1.39	1.35
25	2.16	1.96	2.02	2.61	2.54	2.53	2.41	1.70	4.16	1.48	1.39	1.33
26	2.05	1.90	2.01	2.37	2.33	2.39	2.25	1.71	3.76	1.46	1.52	1.37
27	1.96	1.88	2.01	2.17	2.21	2.31	2.19	1.68	3.06	1.44	1.44	1.33
28	1.91	2.00	1.98	2.16	2.09	2.15	3.17	1.64	2.54	1.50	1.43	1.31
29	1.83	1.94	2.03	2.25	2.01	2.06	3.92	1.57	4.10	1.44	1.41	1.35
30	1.80	1.90	1.95	2.24	-------	2.75	3.92	1.58	5.16	1.39	1.39	1.39
31	1.76	-------	2.02	2.34	-------	2.63	-------	1.55	-------	1.38	1.39	-------

NOTE—Stage-discharge relation Dec. 25-28, Jan. 2-9, 22, 23 and Jan. 28 to Feb. 8 affected by ice.

Daily discharge, in second-feet, of Little Swatara Creek near Pine Grove, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.6	37	51	76	40	63	136	308	23	356	13	10
2	5.1	35	101	60	36	53	104	210	21	210	12	10
3	9.4	35	185	44	36	48	84	149	19	149	11	40
4	172	45	138	36	55	47	71	118	19	124	9.9	20
5	70	37	117	36	100	38	64	104	35	260	20	16
6	43	34	98	36	65	31	58	109	138	185	31	18
7	33	29	149	36	60	30	50	76	87	110	85	22
8	32	27	480	40	160	31	61	65	65	84	38	17
9	26	27	284	44	172	26	46	61	80	67	26	14
10	21	24	172	44	91	37	41	56	67	59	20	15
11	20	24	138	38	71	29	41	50	55	51	80	12
12	27	23	134	36	60	35	82	48	49	49	45	11
13	332	21	124	37	46	69	54	40	45	48	29	12
14	172	20	172	37	71	84	98	37	55	78	25	13
15	90	20	149	35	248	67	112	33	57	42	20	10
16	70	20	172	30	133	58	91	32	44	38	19	9.9
17	133	63	210	35	107	54	79	32	40	31	28	11
18	260	356	160	34	99	65	67	29	40	27	22	9.4
19	651	172	117	41	79	60	60	39	55	26	18	10
20	504	114	98	138	62	55	53	94	36	25	15	18
21	284	94	85	107	64	58	48	53	40	22	14	14
22	185	83	73	36	62	84	102	47	106	22	29	10
23	133	73	63	28	455	160	99	41	88	22	15	12
24	102	68	54	94	284	149	129	37	106	20	12	10
25	83	59	48	160	149	149	122	35	558	18	12	9.4
26	69	53	44	115	109	118	96	36	455	17	20	11
27	59	51	44	84	90	106	87	33	284	15	15	9.4
28	54	63	48	48	74	82	308	30	149	19	15	8.3
29	46	57	67	40	64	70	480	25	528	15	14	10
30	43	53	58	38	-------	198	480	26	800	12	12	12
31	40	-------	65	36	-------	172	-------	24	-------	12	12	-------

NOTE—Discharge Dec. 25-28, Jan. 2-9, 22, 23 and Jan. 28 to Feb. 8 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Swatara Creek at Harpers and Little Schuylkill River at Tamaqua.

Monthly discharge of Little Swatara Creek near Pine Grove, for the year ending Sept. 30, 1928

(Drainage area 34 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	651	5.1	122	3.59	4.14
November	256	20	60.6	1.78	1.99
December	480	44	126	3.71	4.28
January	160	28	54.8	1.61	1.86
February	455	36	108	3.18	3.43
March	198	26	75.0	2.21	2.55
April	480	41	113	3.32	3.70
May	308	24	67.0	1.97	2.27
June	800	19	138	4.06	4.53
July	356	12	71.4	2.10	2.42
August	85	9.9	23.8	.700	.81
September	40	8.3	13.5	.397	.44
The Year	800	5.1	80.9	2.38	32.42

SUSQUEHANNA BASIN—STATION NO. 30

SWATARA CREEK AT HARPERS

Location.—At two-span steel highway bridge, Harpers, Lebanon County, about five miles northwest of Annville.

Drainage Area.—334 square miles.

Records Available.—December 17, 1918, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Elmer G. Shuey.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—At low and medium stages, the stream flows under the left span of the bridge. There is a flood plane under the right span which is covered by water during high stages. Outside of the flood plane both banks are of medium height but not subject to overflow. Bed is composed of culm and gravel. Control is at a riffle about 300 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 11.00 feet at 6 a. m. June 30 (discharge, 8,650

second-feet); minimum, 0.32 foot at 8.50 a. m. October 2 (discharge, 52 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,000 second-feet and fairly well defined from 1,000 to 6,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Daily Mean Gage Height, in feet, of Swatara Creek at Harpers, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.34	1.58	1.96	3.10	1.90	2.36	3.21	5.31	1.05	5.52	0.70	0.54
2	.36	1.50	2.70	2.25	1.84	2.10	2.90	4.37	1.01	4.16	.70	.56
3	.58	1.46	4.07	2.05	1.78	1.95	2.62	3.79	1.07	3.47	.79	1.28
4	5.34	1.70	3.16	2.10	1.65	1.76	2.48	3.37	.97	3.17	.78	1.56
5	2.73	1.71	3.37	3.30	2.95	1.75	2.29	3.06	1.32	3.41	.87	.87
6	1.80	1.58	3.24	3.60	2.55	1.56	2.14	3.30	3.89	3.86	1.12	.66
7	1.47	1.36	3.22	3.26	2.01	1.50	2.00	2.68	2.82	3.02	1.72	1.11
8	1.40	1.28	7.11	2.87	2.95	1.45	2.44	2.43	2.17	2.55	1.47	.91
9	1.16	1.26	5.52	1.82	4.40	1.49	2.12	2.26	2.21	2.30	.89	.66
10	1.00	1.22	4.06	1.82	3.10	1.49	1.93	2.17	2.87	2.09	.74	.56
11	.96	1.11	3.68	1.64	2.56	1.50	1.84	2.03	2.07	2.03	1.05	.53
12	.85	1.14	3.66	1.60	2.30	1.59	2.67	1.97	1.87	2.27	1.62	.50
13	6.48	1.31	3.75	1.56	2.08	2.20	2.42	1.77	1.72	2.13	.93	.60
14	4.25	1.01	4.55	1.61	2.69	3.00	2.77	1.67	1.71	3.28	.75	.93
15	3.10	1.01	3.54	1.51	7.32	2.48	3.72	1.59	2.01	2.57	.62	.49
16	2.60	1.00	3.69	1.46	4.10	2.19	3.06	1.53	1.62	2.03	.62	.53
17	3.16	1.78	4.55	1.33	3.41	2.14	2.79	1.49	1.42	1.79	.74	.47
18	4.60	6.47	3.79	1.40	3.22	2.32	2.55	1.43	1.29	1.65	1.12	.42
19	7.35	3.81	3.18	1.60	2.66	2.20	2.31	1.57	1.52	1.54	.66	.50
20	7.75	3.04	2.94	3.00	2.52	2.10	2.11	2.42	1.41	1.53	.64	.39
21	5.40	2.79	2.76	2.00	2.16	2.33	2.03	2.01	1.38	1.43	.50	.63
22	4.30	2.75	2.59	2.18	2.02	2.80	2.97	1.77	2.27	1.32	1.04	.50
23	3.52	2.39	2.40	2.12	4.92	3.18	3.20	1.63	2.19	1.42	.93	.56
24	3.08	2.22	2.18	1.78	5.06	3.40	3.62	1.43	2.12	1.31	.64	.50
25	2.70	2.14	1.94	3.60	3.65	3.30	3.21	1.40	4.52	1.21	.59	.38
26	2.43	1.95	1.98	2.75	2.92	3.06	2.91	1.45	6.79	1.17	.69	.46
27	2.18	1.88	1.82	2.27	2.70	2.87	2.82	1.33	4.77	1.19	.71	.44
28	2.06	2.16	1.70	2.12	2.53	2.48	7.27	1.32	3.67	1.10	.56	.48
29	1.92	2.27	1.97	1.56	2.38	2.32	6.85	1.15	5.29	.93	.71	.45
30	1.78	2.06	2.30	1.86	-------	3.64	6.37	1.15	9.02	.76	.56	.50
31	1.68	-------	2.40	1.79	-------	3.66	-------	1.25	-------	.79	.82	-------

NOTE—Stage-discharge relation Jan. 4-8, 22, 23 and Jan. 30 to Feb. 3 affected by ice.

Daily discharge, in second-feet, of Swatara Creek at Harpers, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	400	528	1,080	340	717	1,140	2,690	222	2,850	129	94
2	59	365	861	630	340	588	967	1,940	207	1,810	129	99
3	103	348	1,740	547	380	528	811	1,530	222	1,320	150	300
4	2,690	436	1,140	480	418	454	763	1,260	198	1,140	147	382
5	861	436	1,260	400	1,020	454	673	1,080	300	1,260	170	170
6	472	400	1,140	400	811	382	588	1,200	1,600	1,600	238	120
7	348	316	1,140	420	547	365	547	861	913	1,020	436	238
8	332	300	4,320	440	1,020	348	717	717	630	811	348	181
9	254	284	2,850	472	1,940	365	588	673	630	673	175	120
10	207	269	1,740	472	1,080	365	528	630	967	588	138	99
11	195	238	1,460	418	811	365	490	547	588	547	222	92
12	165	254	1,460	400	673	400	861	528	490	673	400	86
13	3,750	238	1,530	382	588	630	717	454	436	588	187	107
14	1,810	207	2,130	400	861	1,020	913	418	436	1,200	140	187
15	1,080	207	1,320	365	4,520	763	1,460	400	547	811	111	84
16	811	207	1,460	348	1,740	630	1,080	382	400	547	111	92
17	1,140	472	2,130	316	1,260	588	913	365	332	472	138	80
18	2,130	3,750	1,530	332	1,140	673	811	348	300	418	238	70
19	4,620	1,530	1,140	400	861	630	673	382	365	382	120	86
20	5,020	1,020	967	1,020	763	588	588	717	332	382	116	64
21	2,770	913	913	547	630	673	547	547	332	348	86	114
22	1,890	913	811	340	547	913	528	454	673	300	222	86
23	1,320	717	717	320	2,370	1,140	1,140	418	630	332	187	99
24	1,080	630	630	472	2,530	1,260	1,390	348	588	300	116	86
25	861	588	528	1,390	1,390	1,200	1,140	332	2,050	269	105	62
26	717	528	547	913	967	1,080	967	348	4,020	254	127	78
27	630	509	472	673	861	967	913	316	2,290	269	131	74
28	588	630	436	588	763	763	4,520	300	1,460	238	99	82
29	509	673	528	382	717	673	4,020	254	2,690	187	131	76
30	472	588	673	360	-------	1,390	3,660	254	6,250	143	99	86
31	436	-------	717	360	-------	1,460	-------	284	-------	150	157	-------

NOTE—Discharge Jan. 4-8, 22, 23 and Jan. 30 to Feb. 3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Little Swatara Creek near Pine Grove and Schuylkill River at Reading.

Monthly discharge of Swatara Creek at Harpers, for the year ending Sept. 30, 1928

(Drainage area 334 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	5,020	55	1,210	3.62	4.17
November	3,750	207	612	1.83	2.04
December	4,320	436	1,250	3.74	4.31
January	1,390	316	518	1.55	1.79
February	4,520	340	1,100	3.29	3.55
March	1,460	348	722	2.16	2.49
April	4,520	490	1,160	3.47	3.87
May	2,690	254	677	2.03	2.34
June	6,250	198	1,040	3.11	3.47
July	2,850	143	706	2.11	2.43
August	436	86	171	.512	.59
September	382	62	120	.359	.40
The Year	6,250	55	772	2.31	31.45

SOUTH BRANCH CODORUS CREEK NEAR YORK

Location.—At York Water Company Pumping Station near York, York County, about one-half mile upstream from the confluence of South and West Branches, Codorus Creek.

Drainage Area.—114 square miles.

Records Available.—May 21, 1925, to September 30, 1928.

Gages.—Staff gage fastened to braced support at right bank, 48 feet upstream from the crest of dam, elevation of gage zero 378.03 feet. Automatic water stage recorder installed in engine room with float on intake canal, elevation of gage zero 378.10 feet, corresponding to elevation of dam crest at right end. Automatic water stage recorder installed August 21, 1928, 182 feet downstream from the crest of dam on right bank. Elevation of gage zero 373.03 feet. Staff gage read to hundredths once daily and automatic water stage recorders inspected by employes of the York Water Company. All elevations are referred to United States Geological Survey datum.

Discharge Measurements.—Made by wading at automatic gage.

Channel and Control.—Banks are low and subject to overflow at high stages. Control for staff and engine house gages is the York Water Company dam; permanent. Stage-discharge relation affected by varying amounts of leakage through the retaining wall at left end of dam and through the gates at the head of the flushing canal which diverts flow around the right end of the dam. Control for low stages at the automatic gage below the dam is about 200 feet downstream from the gage, where the bed is composed of large stones, probably permanent.

Extremes of Discharge.—Maximum stage during the year, 4.35 feet observed at 2 a. m. July 13 (discharge, about 1,850 second-feet); minimum, 0.23 foot at 4 p. m. October 2 (discharge, 19 second-feet).

Ice.—Stage-discharge relation rarely affected by ice.

Diversion.—Water supply for the City of York is taken from the creek about 10 feet upstream from the staff gage.

Accuracy.—Stage-discharge relation permanent throughout the year. Two rating tables used; one for period of staff gage readings, October 1 to August 20, fairly well defined from 20 to 300 second-feet, and the other for the period of automatic water stage recorder graph, August 21 to September 30, well defined between 20 and 300 second-

feet and fairly well defined above that limit. Daily discharge ascertained by applying to rating table daily mean gage height, computed from a continuous daily hydrograph, constructed from staff gage heights used in conjunction with engine room gage charts to August 20, and subsequent to that date they were computed from the graph of the automatic water stage recorder located 182 feet downstream from the dam. Results good.

Cooperation.—Station is maintained in cooperation with the York Water Company, York, Pennsylvania.

Discharge measurements of South Branch Codorus Creek near York during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
16	May 31	J. M. Snavely	1.68	89.8
17	31	do	1.68	91.7
18	Aug. 10	R. H. Hosmer	1.68	90.9
19	21	J. M. Snavely	1.97	108
20	21	do	1.94	103

Measurements made by wading at automatic gage site, 182 feet downstream from crest of dam.

Daily Mean Gage Height, in feet, of South Branch Codorus Creek near York, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.23	0.67	0.62	0.82	0.74	1.09	0.99	1.83	0.68	1.06	0.83	1.70
2	.22	.67	1.05	.68	.74	1.03	.97	1.59	.68	1.02	.82	1.72
3	.29	.65	1.20	.68	.72	1.13	.93	1.47	.68	1.01	.73	2.08
4	1.61	.81	1.00	.68	.70	.97	.91	1.37	.98	1.02	.72	2.24
5	.81	.67	1.02	.70	1.15	.97	.89	1.29	1.08	.95	.76	1.82
6	.77	.63	1.02	.75	1.05	.89	.87	1.35	1.58	.93	.72	2.43
7	.66	.63	1.15	.75	.99	.89	.87	1.19	.82	.87	.70	2.55
8	.56	.59	2.15	.80	2.30	.89	.93	1.09	.76	.87	.70	2.18
9	.53	.63	1.60	.86	2.40	.99	.81	1.11	.98	.77	.68	1.97
10	.51	.57	1.30	.82	1.65	1.04	.79	1.07	.78	.77	.76	1.85
11	.51	.61	1.28	.75	1.38	1.01	.75	1.03	.98	.81	1.21	1.78
12	.81	.57	1.28	.84	1.22	1.09	1.01	1.01	.76	1.57	1.11	1.74
13	1.71	.59	1.21	.84	1.10	1.05	.88	1.01	.72	2.64	.78	2.00
14	.96	.51	1.12	.82	1.55	1.01	1.27	.87	.64	1.67	.74	2.21
15	.73	.57	1.10	.82	2.40	.97	.89	.87	.60	1.27	.66	1.76
16	.67	.57	1.28	.82	1.70	1.05	.85	.85	.66	1.09	.66	1.75
17	.76	.81	1.02	.82	1.44	.97	.83	.83	.68	1.08	2.39	1.73
18	1.46	1.06	.96	.80	1.52	1.11	.79	.95	.90	.99	1.15	1.70
19	2.11	.85	.92	1.08	1.32	1.07	.79	1.04	1.00	.93	.90	1.92
20	1.81	.74	.88	.95	1.24	1.13	.75	.99	.96	.87	.80	2.45
21	1.36	.74	.88	.86	1.16	1.17	.75	.87	.83	.82	1.96	2.02
22	1.13	.72	.86	.68	1.08	1.27	.91	.91	2.28	1.09	2.65	1.78
23	1.08	.68	.90	.88	1.70	1.19	1.29	.81	1.48	1.11	2.07	1.80
24	.98	.66	.82	.90	1.60	1.21	1.79	.83	1.33	.89	1.96	1.75
25	.79	.64	.80	1.08	1.30	1.18	1.25	.81	1.23	.79	1.92	1.75
26	.87	.62	.86	.98	1.26	1.15	1.17	.79	1.43	.77	2.00	1.82
27	.77	.62	.82	.86	1.17	1.09	1.17	.83	1.30	.83	1.94	1.70
28	.71	.70	.78	.80	1.11	1.05	2.79	1.11	1.06	.91	1.90	1.63
29	.69	.66	.80	.75	1.13	1.03	2.64	.99	1.68	.95	1.80	1.75
30	.67	.60	.85	.68	-------	1.31	2.19	.59	1.18	.83	1.82	2.13
31	.67	-------	.88	.68	-------	1.13	-------	.67	-------	.81	1.73	-------

NOTE—Gage heights Oct. 1 to Aug. 20 observed at staff gage and Aug. 21 to Sept. 30 at automatic gage.

Daily discharge in second-feet, of South Branch Codorus Creek near York, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	84	73	124	102	222	180	575	87	202	127	87
2	19	84	202	87	102	202	173	451	87	183	124	87
3	24	80	264	87	96	243	159	378	87	183	99	132
4	451	121	183	87	91	173	152	330	176	183	96	152
5	121	84	183	91	243	173	146	306	222	166	107	97
6	110	76	183	104	202	146	140	330	451	159	96	181
7	82	76	243	104	180	146	140	264	124	140	91	197
8	62	67	750	118	800	146	159	222	107	140	91	145
9	56	76	451	137	850	180	121	222	176	110	87	114
10	53	64	306	124	476	202	115	202	113	110	107	102
11	53	71	306	104	353	183	104	202	143	121	264	97
12	121	64	306	130	264	222	183	183	107	426	222	92
13	500	67	264	130	222	202	127	183	96	950	113	120
14	169	53	222	124	426	183	285	140	78	476	102	145
15	99	64	222	124	850	173	146	140	69	285	82	92
16	84	64	306	124	500	202	134	134	82	222	82	92
17	107	121	183	124	378	173	127	127	87	202	850	92
18	378	202	169	118	402	222	115	166	149	180	243	87
19	700	134	156	222	306	202	115	202	183	159	149	108
20	550	102	143	166	285	243	104	180	169	140	118	181
21	330	102	143	137	243	243	104	140	127	124	114	120
22	243	96	137	87	222	285	152	152	800	222	214	97
23	202	87	118	143	500	264	306	121	402	222	126	97
24	159	82	124	149	451	264	550	127	330	146	114	92
25	115	78	118	222	306	264	285	121	285	115	108	92
26	140	73	137	176	285	243	243	115	378	110	120	97
27	110	73	124	137	243	222	243	127	306	127	114	87
28	94	91	113	118	222	202	1,050	222	202	152	108	82
29	89	82	118	104	243	202	950	180	500	166	97	92
30	84	69	134	87	-------	306	750	67	264	127	97	138
31	84	-------	143	87	-------	243	-------	84	-------	121	92	-------

NOTE—Discharge does not include the quantity of water diverted by the York Water Company.

Monthly discharge of South Branch Codorus Creek near York, for the year ending Sept. 30, 1928

(Drainage area 114 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	700	19	174	1.62	1.87
November	202	53	86.2	.856	.96
December	750	73	210	1.94	2.24
January	222	87	125	1.18	1.36
February	850	81	339	3.07	3.31
March	306	146	212	1.95	2.25
April	1,050	104	252	2.30	2.57
May	575	67	206	1.90	2.19
June	800	69	213	1.96	2.19
July	950	110	205	1.90	2.19
August	850	82	147	1.39	1.60
September	197	82	113	1.09	1.22
The Year	1,050	19	190	1.76	23.95

NOTE—Discharge does not include the water diverted by the York Water Company. Run-off does include the water diverted.

SUSQUEHANNA BASIN—STATION NO. 32

CODORUS CREEK AT YORK

Location.—At three-span steel highway bridge, South Penn Street, York, York County.

Drainage Area.—221 square miles.

Records Available.—October 7, 1915, to August 31, 1923, and August 20, 1926, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; usually read once daily to hundredths by employes of Schmidt & Ault Paper Company. Elevation of gage zero 351.86 feet, United States Geological Survey datum; previously published as 351.79 feet.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of mud and gravel. The Loucks Mill Dam, located about one and one-half miles downstream from gage, is control for medium, high and probably low stages when the water surface at dam is not below the crest elevation. During low stages, when the water surface is below the crest of dam, the station control is probably at a riffle about 800 feet downstream from the gage. Stage-discharge relation variable during low stages on account of operation at Loucks Mill.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 9.80 feet at 5 p. m. October 13; minimum, 1.28 feet at 2.30 p. m. August 19.

Ice.—Stage-discharge relation rarely affected by ice.

Cooperation.—Station is maintained in cooperation with Schmidt & Ault Paper Company, York, Pennsylvania.

Daily Mean Gage Height, in feet, of Codorus Creek at York, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.37	2.04	1.91	2.44	-------	2.69	2.52	-------	1.97	2.76	2.12	1.88
2	1.47	1.98	-------	-------	-------	2.57	2.49	3.77	1.99	-------	2.16	1.83
3	1.59	1.98	2.11	1.83	-------	2.53	-------	3.50	1.94	2.48	2.00	2.17
4	5.81	2.34	2.56	1.84	-------	2.39	2.25	3.32	-------	2.38	1.98	2.56
5	2.15	2.02	2.63	1.94	-------	2.39	-------	3.16	2.06	2.60	1.98	1.96
6	1.75	-------	2.69	1.86	-------	2.27	2.24	3.20	3.71	2.54	1.94	2.26
7	1.65	1.90	2.98	1.88	-------	2.21	2.32	-------	2.36	2.28	2.00	2.56
8	1.63	1.88	5.39	2.00	-------	2.23	2.54	2.78	2.13	2.21	1.96	2.16
9	-------	1.90	3.73	2.02	-------	2.39	2.26	2.72	2.21	2.24	1.92	2.12
10	1.71	1.82	3.07	2.02	-------	2.53	2.26	2.68	2.91	2.10	1.92	-------
11	1.50	1.84	3.06	1.98	-------	2.63	2.24	2.56	2.15	2.20	2.54	2.04
12	1.54	-------	3.13	1.92	-------	2.67	3.08	2.71	2.09	4.95	2.26	-------
13	6.97	-------	2.97	1.94	-------	2.61	2.42	2.43	2.11	-------	2.20	-------
14	-------	1.77	2.91	1.98	3.04	2.53	2.60	2.39	-------	4.20	-------	-------
15	2.44	1.73	-------	-------	5.09	2.45	2.60	2.31	2.05	3.00	1.88	-------
16	2.09	1.79	2.67	1.84	3.74	2.39	2.36	2.33	1.94	2.74	2.10	-------
17	2.34	1.88	2.70	1.84	-------	2.51	2.36	2.27	1.98	2.64	5.39	-------
18	4.14	3.73	2.51	-------	3.39	2.78	2.28	2.27	-------	2.48	2.20	-------
19	5.99	-------	2.34	2.06	3.15	-------	-------	2.65	2.38	2.44	1.30	2.10
20	4.64	-------	2.24	2.46	2.84	2.63	2.24	2.61	2.22	2.46	2.14	2.64
21	3.69	2.17	2.30	1.66	2.59	2.97	2.36	2.31	2.08	2.44	2.10	2.20
22	3.14	2.14	2.30	1.91	5.25	3.17	2.64	2.41	4.50	2.57	3.15	2.04
23	2.78	2.07	2.21	-------	4.94	-------	-------	2.33	3.70	4.48	2.26	2.01
24	2.62	-------	2.17	1.96	3.59	3.03	-------	2.21	3.20	3.10	2.16	-------
25	2.44	2.03	2.19	1.46	3.09	2.97	-------	2.15	2.95	2.66	2.08	1.92
26	-------	1.83	2.17	1.76	2.76	2.85	-------	2.35	4.70	2.44	2.06	2.08
27	-------	1.96	2.02	1.75	2.72	2.79	3.78	2.18	3.75	-------	2.16	2.02
28	2.24	2.07	1.98	1.79	2.70	2.69	6.47	2.21	2.85	2.34	2.06	1.96
29	2.08	2.05	-------	-------	2.68	-------	6.12	2.27	3.45	2.21	1.96	2.10
30	2.11	1.97	2.28	-------	-------	3.18	-------	1.98	2.90	-------	1.94	2.44
31	2.04	-------	2.30	-------	-------	2.63	-------	1.89	-------	-------	-------	-------

NOTE—Gage heights not observed on days of no record.

OHIO BASIN

OHIO BASIN—STATION NO. 1

ALLEGHENY RIVER NEAR LARABEE

Location.—At old single-span steel highway bridge on road to Corryville, about one mile south of Pennsylvania Railroad station at Larabee, McKean County, until April 22, 1926. At new single-span steel highway bridge 80 feet downstream from the old bridge subsequent to May 18, 1926.

Drainage Area.—545 square miles.

Records Available.—June 29, 1915, to September 30, 1928.

Gage.—Standard chain attached to upstream side of new bridge; read by Marian V. Leet.

Discharge Measurements.—Made from upstream side of bridges or by wading; during extremely high stages from railroad bridge a short distance downstream.

Channel and Control.—The right bank is high and not subject to overflow. At a gage height of about 4 feet the river begins to overflow the left bank upstream from the bridge into a broad flat, where a part of the stream flow remains in storage until the river recedes. Bed is composed of gravel, stones and boulders. Low-water control is the upper sill of an old timber dam 30 feet downstream from gage. The timber abutments are vertical and have the effect of a weir at low stages.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 17.60 feet at noon November 18 (discharge, about 9,100 second-feet); minimum, 0.43 foot at 8 a. m. October 1 and 3 (discharge, 40 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined from 50 to 2,000 second-feet and fairly well defined from 2,000 to 4,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh, Pennsylvania.

Discharge measurements of Allegheny River near Larabee during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
25	Oct. 6a	Geo. Weber	0.67	75.6
26	6a	do	.67	76.0
27	June 8	J. R. Hoffert	11.06	3,760
28	Aug. 29a	J. M. Snavely	.80	115

a Measurement made by wading 10 feet downstream from gage.

Daily Mean Gage Height, in feet, of Allegheny River near Larabee for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.44	1.05	12.61	8.40	3.20	3.86	9.30	7.52	1.65	3.86	1.20	0.81
2	.46	.99	12.14	7.10	2.96	3.41	7.70	7.25	1.63	3.31	1.17	.75
3	.52	2.86	11.45	6.80	2.75	3.30	7.05	6.45	1.57	2.97	1.01	.65
4	1.05	5.50	10.20	5.82	2.73	2.87	7.95	5.88	1.65	3.97	.95	.59
5	1.15	5.46	8.70	5.58	3.90	3.17	8.15	5.38	5.60	4.77	1.02	.62
6	.80	4.70	6.85	5.52	3.75	3.04	7.90	4.78	8.80	7.23	2.37	.62
7	.71	4.12	6.10	4.88	3.17	2.78	7.75	4.30	10.65	5.97	1.97	.66
8	.77	3.81	7.50	4.65	3.65	2.62	10.40	3.80	10.86	5.22	.97	.69
9	.75	3.50	7.21	4.35	5.60	3.15	11.65	3.58	10.08	4.39	1.02	.65
10	.66	3.50	6.88	4.00	4.62	2.91	11.08	3.36	10.19	4.45	1.81	.61
11	.61	4.70	6.42	3.75	4.18	3.15	10.10	3.14	9.40	4.69	3.41	.56
12	1.10	6.95	6.30	3.55	3.91	4.05	9.12	2.92	8.02	6.07	2.16	.57
13	3.83	6.70	7.60	3.84	3.10	6.65	8.60	2.67	6.38	5.87	1.52	.57
14	2.50	5.75	10.15	4.42	4.20	9.74	8.00	2.46	5.60	5.22	1.24	.53
15	1.56	5.10	11.50	4.25	9.48	9.10	9.20	2.15	5.33	4.47	1.14	.55
16	1.24	4.60	11.38	3.66	10.10	6.95	8.80	2.16	4.60	3.77	1.02	.60
17	1.03	8.30	11.85	3.95	8.60	5.90	7.85	2.13	3.72	3.39	.93	.59
18	1.02	15.40	11.50	3.85	6.75	5.50	7.02	2.24	3.40	3.07	.95	.59
19	1.50	12.20	10.61	3.85	5.15	4.88	6.25	2.53	4.20	2.67	.80	.57
20	4.60	10.85	9.50	6.32	5.22	4.30	5.50	3.30	3.60	2.74	1.12	.63
21	4.80	9.30	7.60	4.49	4.25	3.98	4.90	2.84	3.40	2.31	1.57	.70
22	3.60	7.50	6.18	5.80	4.27	4.45	6.45	2.64	4.90	2.83	2.11	.66
23	2.83	6.15	5.50	6.65	4.75	4.78	8.18	2.39	4.45	3.62	1.45	.58
24	2.41	7.10	5.25	6.12	6.51	6.20	7.85	2.12	4.22	2.92	1.01	.55
25	2.01	10.10	4.10	6.22	5.50	9.45	7.45	2.03	4.08	2.32	1.12	.57
26	1.73	9.55	4.75	4.80	4.68	10.48	6.92	1.99	3.85	1.99	1.08	.57
27	1.51	10.20	4.70	4.22	4.48	11.56	6.20	2.05	3.42	1.82	.94	.56
28	1.36	11.90	4.15	4.25	4.12	11.98	5.95	1.99	3.26	1.73	.85	.59
29	1.26	12.29	5.00	3.55	4.32	11.24	5.90	2.03	3.20	1.50	.80	.59
30	1.16	12.15	7.70	3.14	-------	10.66	7.45	1.99	3.92	1.34	.75	.60
31	1.09	-------	7.58	3.28	-------	10.32	-------	1.89	-------	1.26	.74	-------

NOTE—Stage-discharge relation Dec. 26, 27, Jan. 22 to Feb. 6 and Feb. 20 to Mar. 13 affected by ice.

Daily discharge, in second-feet, of Allegheny River near Larabee, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	136	4,660	2,320	440	550	2,760	1,950	230	750	162	98
2	45	126	4,350	1,800	420	480	2,080	1,840	230	588	154	88
3	54	485	3,930	1,690	400	440	1,770	1,540	230	510	128	74
4	136	1,230	3,240	1,330	400	420	2,140	1,360	230	777	120	64
5	154	1,230	2,460	1,260	600	400	2,230	1,200	1,260	1,010	128	69
6	96	980	1,690	1,230	600	380	2,100	1,010	2,500	1,840	379	69
7	82	805	1,440	1,040	562	360	2,070	862	3,470	1,400	300	75
8	92	723	1,950	950	669	340	3,350	723	3,630	1,130	123	80
9	88	642	1,840	891	1,260	340	4,050	669	3,180	891	128	74
10	75	642	1,730	777	950	340	3,760	615	3,240	891	264	68
11	68	980	1,540	723	833	380	3,180	536	2,810	980	615	60
12	145	1,770	1,500	669	750	460	2,660	485	2,140	1,440	339	69
13	723	1,660	1,990	723	536	800	2,410	440	1,540	1,360	213	62
14	399	1,330	3,240	891	833	2,960	2,140	399	1,260	1,130	170	56
15	230	1,100	3,990	833	2,860	2,660	2,710	339	1,160	920	154	58
16	170	950	3,930	696	3,180	1,770	2,500	339	950	723	128	66
17	136	2,280	4,160	777	2,410	1,360	2,070	319	696	615	117	64
18	128	6,810	3,990	723	1,690	1,230	1,770	339	615	536	120	64
19	213	4,410	3,470	723	1,130	1,040	1,470	399	833	440	96	62
20	950	3,580	2,860	1,500	800	362	1,230	588	669	440	145	70
21	1,010	2,760	1,990	920	650	777	1,040	462	615	359	230	81
22	669	1,950	1,470	850	650	891	1,540	419	1,040	462	319	75
23	462	1,470	1,230	850	850	1,010	2,230	379	891	669	204	63
24	379	1,800	1,130	900	950	1,470	2,070	319	833	485	128	58
25	300	3,180	805	950	900	2,810	1,920	300	805	359	145	62
26	247	2,910	650	850	800	3,410	1,730	300	723	300	145	62
27	213	3,240	650	700	700	4,050	1,470	300	615	264	118	60
28	188	4,220	833	600	650	4,280	1,400	300	588	247	104	64
29	170	4,470	1,070	550	600	3,820	1,360	300	562	213	96	64
30	154	4,410	2,030	480	-------	3,530	1,920	300	750	188	88	66
31	145	-------	1,990	460	-------	3,290	-------	282	-------	170	87	-------

NOTE—Discharge Dec. 26, 27, Jan. 22 to Feb. 6 and Feb. 20 to Mar. 13 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Allegheny River at Red House, Tionesta Creek at Nebraska and Driftwood Branch Sinnemahoning Creek at Sterling Run.

Monthly discharge of Allegheny River near Larabee, for the year ending Sept. 30, 1298

(Drainage area 545 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,010	42	257	0.472	0.54
November	6,810	126	2,080	3.82	4.26
December	4,660	650	2,320	4.26	4.91
January	2,320	460	957	1.76	2.03
February	3,180	400	968	1.78	1.92
March	4,280	340	1,510	2.77	3.19
April	4,050	1,040	2,170	3.98	4.44
May	1,960	282	633	1.16	1.34
June	3,630	230	1,280	2.35	2.62
July	1,840	170	712	1.31	1.51
August	615	87	182	.334	.39
September	98	56	67.9	.125	.14
The Year	6,810	42	1,090	2.00	27.29

OHIO BASIN—STATION NO. 2

BROKENSTRAW CREEK AT YOUNGSVILLE

Location.—At single-span steel highway bridge, Youngsville, Warren County.

Drainage Area.—290 square miles.

Records Available.—October 22, 1909, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by William L. York. Elevation of gage zero 1,888.92 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of silt, clay and gravel. Control is at the first of a series of riffles, extending from 300 to 500 feet downstream from the gage; may shift occasionally.

Extremes of Discharge.—Maximum stage during the year, 10.75 feet observed at 9.15 a. m. June 24 (discharge, 8,940 second-feet); minimum gage height, -0.41 foot at 8.10 a. m. September 15 and 9.10 a. m. September 18, when the table dated December 1, 1930, was applicable; minimum discharge, 44 second-feet at 8.30 a. m. October 11, when the table dated November 29, 1930, was applicable.

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation affected by ice and changed during high flow of June 24. Two rating curves used; one applicable to June 24 and the other since that date, both tables well defined between 30 and 6,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Brokenstraw Creek at Youngsville during the two years ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
	1926			
47	Nov. 16	R. J. Ferris	7.45	5,570
	1927			
48	July 15a	S. A. Kowalchik	.02	102
	1928			
49	Aug. 27b	do	—0.18	81.7

a Measurement made by wading 800 feet upstream from gage.
b Measurement made by wading 300 feet downstream from gage.

Daily Mean Gage Height, in feet, of Brokenstraw Creek at Youngsville for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	—0.22	0.04	7.56	6.75	1.08	0.76	2.57	1.05	0.39	2.01	0.14	—0.19
2	—.20	.12	5.76	4.25	.85	.74	1.88	.84	.42	1.39	.17	—.22
3	—.18	.17	3.66	2.55	.69	.62	1.82	.78	.36	1.38	.11	—.25
4	.06	.18	2.26	2.15	.68	.90	2.51	.65	.56	1.16	.14	—.22
5	.02	.11	1.68	1.95	1.49	.65	2.18	.58	1.56	2.21	.07	—.24
6	—.16	.23	1.44	1.71	1.55	.58	1.59	.54	5.88	2.26	.42	—.28
7	—.22	.37	1.32	1.55	1.44	.40	1.54	.46	4.41	1.33	.32	—.22
8	—.23	.40	1.93	2.16	3.04	.24	2.33	.40	3.31	.98	.18	—.26
9	—.20	.34	1.40	2.62	4.54	.44	2.13	.41	3.06	.88	.14	—.30
10	—.20	.52	1.03	2.52	3.99	.43	1.84	.38	3.01	.93	.06	—.30
11	—.24	1.17	1.36	1.97	2.79	.43	1.71	.36	2.01	.72	.19	—.32
12	—.11	1.17	2.49	1.93	1.80	1.19	1.75	.34	1.59	.63	.21	—.32
13	.31	.83	3.86	2.17	1.64	2.68	1.82	.27	1.11	.51	.07	—.33
14	.18	.59	6.75	2.64	1.73	6.07	1.83	.27	.82	1.96	.03	—.38
15	.02	.44	5.36	2.32	2.80	4.93	1.93	.25	.67	1.91	—.02	—.40
16	—.01	.62	4.16	1.86	2.49	2.93	1.53	.26	.49	1.34	.04	—.39
17	—.09	6.44	3.54	1.73	1.98	1.73	1.37	.30	.39	.72	—.08	—.39
18	—.04	5.76	2.71	1.53	1.61	1.43	1.22	.53	.48	.71	—.07	—.40
19	—.12	4.47	1.86	1.60	-------	1.22	1.12	.95	.87	.71	—.07	—.40
20	.12	2.62	1.63	2.75	1.11	1.11	.87	1.40	.62	.62	—.11	—.39
21	.34	1.74	1.63	2.10	.90	1.12	.97	.96	2.39	.66	—.09	—.32
22	.15	1.93	1.58	1.31	.96	1.25	3.72	.64	4.64	.86	—.14	—.32
23	-------	2.05	1.55	1.56	1.11	1.73	3.92	.49	4.06	1.31	—.09	—.34
24	—.03	3.44	1.30	1.43	1.83	2.38	2.97	.43	8.90	1.11	—.13	—.38
25	—.09	4.21	1.24	2.10	1.44	3.21	2.00	.37	6.91	.47	—.01	—.34
26	—.11	3.61	.84	1.81	1.38	3.16	1.67	.39	4.66	.51	—.11	—.26
27	—.15	4.86	1.06	1.65	1.01	3.63	1.47	.36	2.86	.36	—.19	—.12
28	—.18	6.11	1.04	1.48	.86	3.15	1.17	.37	2.01	.29	—.03	—.09
29	—.19	5.26	1.85	1.39	.82	2.16	1.02	.44	1.66	-------	—.12	—.11
30	—.21	5.56	4.50	.99	-------	2.89	1.00	.41	2.21	.26	.07	—.18
31	—.13	-------	6.19	1.06	-------	2.68	-------	.40	-------	.18	—.12	-------

NOTE—Gage height Oct. 23, Feb. 19 and July 29 not observed. Stage-discharge relation Dec. 21-25, 27, 28, Jan. 23, 27-29, Jan. 31 to Feb. 2, Feb. 26, Mar. 4-7, 9 and 10 affected by ice.

Daily discharge, in second-feet, of Brokenstraw Creek at Youngsville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50	100	5,740	4,960	320	319	1,290	438	197	1,000	154	77
2	53	120	4,000	2,530	300	319	850	358	206	671	163	72
3	56	132	2,120	1,290	300	265	795	338	188	671	145	68
4	105	135	1,090	1,030	300	240	1,220	282	248	574	154	72
5	95	118	740	910	640	220	1,030	265	690	1,120	134	69
6	60	149	615	740	690	190	690	248	4,100	1,180	247	63
7	50	191	545	690	615	170	640	218	2,710	622	212	72
8	49	200	850	1,030	1,570	152	1,090	200	1,800	483	166	66
9	53	182	590	1,290	2,800	170	970	203	1,640	418	154	60
10	53	230	438	1,220	2,360	180	795	194	1,570	461	131	60
11	48	479	568	910	1,430	209	740	188	910	355	169	58
12	68	479	1,220	850	795	500	795	182	690	335	175	58
13	173	358	2,280	1,030	690	1,360	795	161	458	277	134	57
14	135	265	4,960	1,290	740	4,290	795	161	338	1,000	123	51
15	95	212	3,620	1,090	1,430	3,160	850	155	282	940	111	49
16	88	265	2,530	850	1,220	1,500	640	158	227	622	126	50
17	72	4,580	1,960	740	910	740	568	170	197	355	97	50
18	82	4,000	1,360	640	690	615	500	248	224	355	100	49
19	67	2,800	850	690	550	500	458	398	358	355	100	49
20	120	1,290	690	1,430	458	458	358	590	265	315	91	50
21	182	740	650	970	378	458	398	398	1,150	335	95	58
22	128	850	550	545	398	522	2,120	282	2,890	418	86	58
23	110	910	500	550	458	740	2,280	227	2,440	622	95	56
24	84	1,880	440	615	795	1,150	1,570	209	7,040	528	88	51
25	72	2,530	380	970	615	1,720	910	191	5,050	266	113	56
26	68	2,040	358	795	500	1,720	740	197	3,060	277	91	66
27	62	3,160	360	650	418	2,040	615	188	1,600	226	77	89
28	56	4,290	400	550	358	1,720	479	191	1,000	202	108	95
29	55	3,530	795	460	338	1,030	418	212	827	200	89	91
30	52	3,820	2,800	418	-------	1,500	418	203	1,120	192	100	79
31	65	-------	4,380	360	-------	1,360	-------	200	-------	166	89	-------

NOTE—Discharge estimated Oct. 23, Feb. 19 and July 29, because of no gage height record, and Dec. 21-25, 27, 28, Jan. 23, 27-29, Jan. 31 to Feb. 2, 26, Mar. 4-7, 9 and 10, because of ice, from weather records, study of gage height graph and comparison with similar studies for Allegheny River near Larabee, Tionesta Creek at Nebraska and Oil Creek near Rouseville.

Monthly discharge of Brokenstraw Creek at Youngsville, for the year ending Sept. 30, 1298

(Drainage area 290 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	182	48	80.8	0.279	0.32
November	4,580	100	1,330	4.59	5.12
December	5,740	358	1,560	5.38	6.20
January	4,960	360	1,040	3.59	4.14
February	2,800	300	795	2.74	2.96
March	4,290	152	952	3.28	3.78
April	2,280	358	861	2.97	3.31
May	590	155	247	.852	.98
June	7,040	188	1,450	5.00	5.58
July	1,180	166	501	1.73	1.99
August	247	77	126	.434	.50
September	95	49	63.3	.218	.24
The Year	7,040	48	748	2.58	35.12

OHIO BASIN—STATION NO. 3

TIONESTA CREEK AT NEBRASKA

Location.—At single-span steel highway bridge, Nebraska, Forest County, on road to Newmansville, about one-third of a mile downstream from the mouth of Coon Creek.

Drainage Area.—475 square miles, revised. Published in State reports previous to 1926 as 473 square miles.

Records Available.—October 24, 1909, to September 30, 1912, and August 5, 1923, to September 30, 1928. Records prior to August 5, 1923, are contained in the Report of Flood Commission, Pittsburgh, Pennsylvania, 1911.

Gage.—Standard chain attached to downstream side of bridge; read by Lyman Cook. Elevation of gage zero 1,079.00 feet. United States Geological Survey datum. Elevation of gage zero previously published as 1,077.78 feet, referred to bench mark described on page 190, Report of Flood Commission, Pittsburgh, Pennsylvania, 1911. When the chain gage was established on August 5, 1923, a wrong spike was probably used for bench mark and the elevation of the zero was 1,075.86 feet, instead of 1,077.78 feet. On July 14, 1927, the zero of the gage was raised 3.14 feet to elevation 1,079.00 feet, United States Geological Survey datum, referred to Pennsylvania Department of Highways' bench mark.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—The left bank is high and not subject to overflow; right is of medium height and overflows during extremely high stages. Bed is composed of gravel and rock; probably permanent. Control is the sill of an old dam a few hundred feet downstream from the gage.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 11.60 feet at 9 p. m. November 17 (discharge, 14,300 second-feet); minimum, 0.93 foot from 6 a. m. October 1 to 6 a. m. October 3 (discharge, 35 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined to 14,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Tionesta Creek at Nebraska during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
22	Oct. 4a	S. A. Kowalchik	1.30	92.9
23	14a	do	1.98	273
24	14a	do	1.96	264
25	15a	do	1.72	178
26	15a	do	1.71	176
27	Nov. 28	do	7.68	5,940
28	29	do	7.50	5,630
29	29	do	7.38	5,510
30	29	do	7.38	5,330
31	30	do	6.68	4,600
32	Dec. 1	do	11.10	13,100
33	1	do	11.20	13,300
34	1	do	10.75	12,100
35	2	do	8.15	6,800
36	2	do	7.82	6,250
37	3	do	6.32	4,090
38	6	do	4.00	1,620
39	7	do	3.65	1,330
40	Aug. 25a	do	1.48	132

a Measurement made by wading 200 feet upstream from gage.

Daily Mean Gage Height, in feet, of Tionesta Creek at Nebraska for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.93	1.44	10.40	6.38	2.20	2.50	4.80	3.15	2.10	3.75	1.80	1.40
2	.93	1.49	8.00	5.08	2.12	2.55	4.40	3.05	2.05	3.20	1.75	1.32
3	1.03	1.88	6.18	4.30	2.05	2.15	4.25	2.85	2.05	3.15	1.65	1.23
4	1.29	2.37	5.05	3.75	2.00	2.15	4.60	2.70	2.15	4.15	1.75	1.22
5	1.40	2.43	4.35	3.60	3.35	2.15	4.20	2.55	4.90	5.50	1.70	1.18
6	1.32	2.39	3.95	3.50	3.30	2.15	4.12	2.50	7.90	6.95	2.05	1.23
7	1.36	2.29	3.58	3.35	3.05	2.00	4.20	2.45	6.75	5.00	2.10	1.31
8	1.40	2.19	4.10	3.35	3.75	2.00	6.00	2.25	5.55	4.15	1.80	1.40
9	1.35	2.16	3.45	3.38	5.15	2.25	5.35	2.20	5.95	3.65	1.60	1.35
10	1.34	2.20	3.15	3.25	4.50	2.10	4.60	2.15	6.15	3.85	1.60	1.26
11	1.30	2.47	3.20	2.95	4.05	2.15	4.15	2.05	5.15	3.30	2.35	1.23
12	1.30	2.80	4.10	2.82	3.65	2.75	4.25	2.00	4.35	3.10	1.95	1.24
13	2.25	2.50	4.85	2.90	3.40	3.65	4.20	1.95	4.00	2.75	1.70	1.17
14	2.04	2.05	9.22	3.40	3.45	6.33	3.95	1.90	3.80	2.95	1.55	1.10
15	1.68	2.00	7.10	3.10	4.55	5.10	4.50	1.85	3.50	2.70	1.50	1.15
16	1.57	2.15	7.80	2.85	4.05	4.25	3.95	1.90	3.15	2.45	1.40	1.29
17	1.50	8.70	8.10	2.90	3.85	3.95	3.80	1.90	2.70	2.30	1.45	1.30
18	1.46	9.60	6.30	3.05	3.55	3.65	3.55	2.60	3.25	2.10	1.50	1.28
19	1.45	6.50	5.18	3.05	3.20	3.35	3.30	2.75	3.90	2.15	1.54	1.30
20	1.82	5.00	4.65	4.65	3.00	3.20	3.10	4.05	3.30	2.75	1.52	1.30
21	2.49	4.20	4.15	3.70	2.22	3.00	3.00	3.50	3.35	2.35	1.55	1.36
22	2.04	3.85	3.75	3.30	2.38	3.29	5.05	3.10	5.85	2.85	1.75	1.36
23	1.84	3.48	3.45	3.45	2.95	3.35	4.90	2.80	5.95	3.35	1.71	1.31
24	1.66	4.35	3.25	3.30	3.40	4.00	4.45	2.65	6.90	2.75	1.53	1.26
25	1.61	5.60	2.70	4.20	2.85	5.45	4.15	2.50	5.35	2.35	1.49	1.25
26	1.59	4.80	2.52	3.65	2.30	5.65	3.90	2.25	4.60	2.15	1.49	1.30
27	1.52	6.25	2.50	3.05	2.65	7.20	3.55	2.50	4.10	2.00	1.42	1.33
28	1.48	7.85	2.48	2.95	2.60	6.15	3.40	2.25	3.50	2.05	1.40	1.27
29	1.48	7.42	3.50	2.70	2.50	5.15	3.35	2.40	3.50	2.00	1.38	1.27
30	1.46	7.35	5.25	2.40	-------	6.40	3.30	2.35	4.05	1.90	1.50	1.30
31	1.44	-------	5.55	2.30	-------	5.80	-------	2.25	-------	1.85	1.55	-------

NOTE—Stage-discharge relation Jan. 5-8, 23 and Feb. 27 to Mar. 6 affected by ice.

Daily discharge, in second-feet, of Tionesta Creek at Nebraska, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	115	11,300	4,170	359	360	2,330	975	317	1,450	209	107
2	35	126	6,500	2,630	317	340	1,950	830	298	975	194	93
3	48	235	3,910	1,860	298	320	1,770	728	298	975	166	78
4	87	430	2,530	1,450	278	300	2,130	630	338	1,770	194	76
5	107	482	1,950	1,000	1,130	300	1,770	540	2,430	3,050	179	70
6	93	455	1,610	850	1,050	300	1,690	510	6,340	5,000	298	78
7	89	405	1,290	750	830	278	1,770	482	4,720	2,530	317	91
8	107	359	1,690	950	1,450	278	3,650	382	3,170	1,770	209	107
9	98	338	1,130	1,130	2,730	382	2,940	359	3,650	1,290	152	98
10	96	359	975	975	2,040	317	2,130	338	3,910	1,450	152	83
11	89	482	975	795	1,610	338	1,770	298	2,730	1,050	430	78
12	89	695	1,690	695	1,290	662	1,770	278	1,950	900	260	79
13	382	510	2,330	760	1,130	1,290	1,770	260	1,610	662	179	68
14	298	298	8,700	1,130	1,130	4,040	1,610	242	1,450	795	140	58
15	174	278	5,140	900	2,130	2,630	2,040	226	1,210	630	128	66
16	145	338	6,180	728	1,610	1,770	1,610	242	975	482	107	87
17	128	7,730	6,670	760	1,450	1,610	1,450	242	630	405	118	89
18	120	9,500	4,040	830	1,290	1,290	1,290	570	975	317	128	86
19	118	4,300	2,730	830	975	1,130	1,050	662	1,530	338	138	89
20	216	2,530	2,130	2,130	830	975	900	1,610	1,050	662	133	89
21	510	1,770	1,770	1,370	359	830	830	1,210	1,130	430	140	100
22	298	1,450	1,450	1,050	455	975	2,530	900	3,410	728	194	100
23	222	1,210	1,130	950	795	1,130	2,430	695	3,650	1,130	182	91
24	168	1,950	975	1,050	1,130	1,610	1,950	600	4,860	662	135	83
25	155	3,170	630	1,770	728	2,940	1,770	510	2,940	430	126	81
26	150	2,330	510	1,290	405	3,170	1,530	382	2,130	338	126	89
27	133	3,910	510	830	380	5,280	1,290	510	1,690	278	111	94
28	124	6,180	510	795	360	3,910	1,130	382	1,210	298	107	84
29	124	5,580	1,210	630	360	2,730	1,130	455	1,210	278	103	84
30	120	5,580	2,730	455	-------	4,170	1,050	430	1,610	242	128	89
31	115	-------	3,170	405	-------	3,410	-------	382	-------	226	140	-------

NOTE—Discharge Jan. 5-8, 23 and Feb. 27 to Mar. 6 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Allegheny River near Larabee, Brokenstraw Creek at Youngsville, Oil Creek near Rouseville and Clarion River near Piney.

Monthly discharge of Tionesta Creek at Nebraska, for the year ending Sept. 30, 1928

(Drainage area 475 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	510	35	151	0.318	0.37
November	9,500	115	2,100	4.42	4.93
December	11,300	510	2,840	5.98	6.89
January	4,170	405	1,160	2.44	2.81
February	2,730	278	997	2.10	2.26
March	5,280	278	1,580	3.33	3.84
April	3,650	830	1,770	3.73	4.16
May	1,610	226	544	1.15	1.33
June	6,340	298	2,110	4.44	4.95
July	5,000	226	1,020	2.15	2.48
August	317	103	172	.362	.42
September	107	58	85.5	.180	.20
The Year	11,300	35	1,210	2.55	34.64

OHIO BASIN—STATION NO. 4

OIL CREEK NEAR ROUSEVILLE

Location.—At two-span steel highway bridge, one-half mile downstream from Rouseville, Venango County.

Drainage Area.—330 square miles.

Records Available.—October 20, 1909, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Lenna Copeland.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Left bank is high and not subject to overflow; right becomes inundated at a stage of about 9.2 feet. Bed is composed of gravel and boulders. Control is the first of a series of riffles extending from 250 to 450 feet downstream from the gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 5.70 feet at 4 a. m. December 1 (discharge, 8,000 second-feet); minimum, 0.74 foot from 10 a. m. October 10 to 10 a. m. October 11 (discharge, 57 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,000 second-feet and fairly well defined above. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Oil Creek near Rouseville during the year ending Sept. 30, 1298

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
48	Aug. 25	S. A. Kowalchik	0.96	92.6

Measurement made by wading 200 feet upstream from gage.

Daily Mean Gage Height, in feet, of Oil Creek near Rouseville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.78	0.92	5.35	4.00	1.48	1.49	2.45	1.65	1.16	1.96	1.08	0.89
2	.76	.90	3.65	2.85	1.46	1.42	2.17	1.61	1.14	1.66	1.11	.86
3	.81	1.05	2.67	2.49	1.42	1.38	2.12	1.51	1.14	1.56	1.11	.86
4	.93	1.03	2.25	2.09	1.42	1.39	2.35	1.56	1.24	1.87	1.11	.86
5	.85	1.00	2.00	2.00	2.30	1.31	2.04	1.41	1.82	2.05	1.08	.84
6	.80	1.09	1.87	2.00	2.07	1.30	2.02	1.39	4.10	3.00	1.50	.84
7	.80	1.09	1.77	1.82	1.95	1.26	1.91	1.32	3.70	2.05	1.44	.94
8	.81	1.04	1.75	2.13	2.68	1.19	2.45	1.30	2.50	1.67	1.20	.90
9	.78	1.04	1.70	2.42	3.60	1.28	2.22	1.28	2.65	1.53	1.13	.86
10	.74	1.06	1.49	2.13	2.70	1.23	2.12	1.26	3.42	1.58	1.12	.84
11	.75	1.19	1.66	1.85	2.23	1.24	2.04	1.24	2.42	1.52	1.74	.84
12	.84	1.15	2.25	1.90	1.97	1.84	2.01	1.26	2.00	1.38	1.32	.82
13	1.21	1.00	2.90	1.87	1.67	2.50	2.05	1.22	1.77	1.33	1.15	.82
14	1.02	.99	4.60	2.18	1.94	4.30	2.11	1.19	1.69	2.30	1.08	.80
15	.90	.98	3.50	1.91	2.80	3.00	2.17	1.18	1.70	1.89	1.04	.80
16	.88	1.05	3.40	1.76	2.32	2.29	1.93	1.16	1.46	1.67	1.09	.78
17	.84	3.50	3.30	1.76	2.06	2.02	1.84	1.20	1.42	1.46	1.06	.78
18	.84	4.30	2.62	1.76	1.96	2.00	1.78	1.54	1.57	1.32	1.03	.78
19	.84	2.65	2.21	1.72	1.75	1.82	1.70	2.07	1.86	1.49	1.01	.78
20	.95	2.02	2.16	2.80	1.67	1.63	1.59	1.98	1.58	1.82	1.00	.85
21	1.07	1.79	2.08	2.00	1.52	1.75	1.61	1.68	1.58	1.50	.98	.87
22	.99	1.78	1.96	1.74	1.50	1.98	3.20	1.48	2.50	1.78	.98	.86
23	.94	1.70	1.89	1.76	1.85	2.15	2.95	1.38	1.95	1.56	.96	.78
24	.89	2.65	1.78	1.76	2.26	2.20	2.45	1.30	4.10	1.39	.96	.79
25	.87	3.70	1.57	1.80	1.86	2.40	2.22	1.28	3.70	1.29	.96	.76
26	.84	2.45	1.46	2.09	1.60	2.43	2.12	1.26	2.74	1.23	.93	.86
27	.82	3.12	1.50	1.92	1.62	2.95	1.88	1.24	2.17	1.23	.92	.84
28	.82	3.95	1.55	1.79	1.48	2.47	1.80	1.25	1.85	1.22	.90	.84
29	.80	3.35	2.50	1.80	1.55	2.41	1.73	1.24	1.80	1.14	.90	.84
30	.80	3.80	3.60	1.50	-------	3.30	1.66	1.24	2.12	1.11	.90	.84
31	.80	-------	3.85	1.48	-------	2.75	-------	1.19	-------	1.08	.95	-------

NOTE—Stage-discharge relation Dec. 20-25, Jan. 6, 12, 29, Feb. 1-3, 27, 29 and Mar. 1 affected by ice.

Daily discharge, in second-feet, of Oil Creek near Rouseville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	88	7,150	3,650	280	280	1,120	404	162	628	134	80
2	60	82	2,860	1,630	260	274	810	372	154	404	144	75
3	67	125	1,360	1,180	260	255	760	315	154	344	144	75
4	90	119	910	760	274	259	1,020	344	193	547	144	75
5	74	110	670	670	960	223	715	269	508	715	134	72
6	65	137	547	600	715	218	670	259	3,870	1,840	315	72
7	65	137	472	508	628	201	586	227	3,050	715	284	93
8	67	122	472	810	1,430	172	1,120	218	1,180	404	176	82
9	62	122	436	1,070	2,860	210	860	210	1,360	344	151	75
10	57	128	310	810	1,430	189	760	201	2,490	372	147	72
11	58	172	404	547	910	193	715	193	1,070	315	472	72
12	72	158	910	500	628	547	670	201	670	255	227	68
13	180	110	1,700	547	404	1,180	715	184	472	232	158	68
14	116	107	5,040	860	628	1,330	760	172	436	960	134	65
15	82	104	2,670	586	1,560	1,840	810	169	436	586	122	65
16	79	125	2,490	472	960	960	628	162	295	404	137	62
17	72	2,670	2,320	472	715	670	547	176	274	295	128	62
18	72	4,330	1,300	472	628	670	508	344	344	227	119	62
19	72	1,360	860	436	472	508	436	715	547	310	113	62
20	96	670	650	1,560	404	404	372	670	372	508	110	74
21	131	508	600	670	315	472	372	436	372	315	104	77
22	107	508	500	472	315	670	2,150	306	1,180	508	104	75
23	93	436	440	472	547	810	1,770	255	628	344	99	62
24	80	1,360	380	472	910	860	1,120	218	3,870	250	99	64
25	77	3,050	320	508	547	1,070	860	210	3,050	214	99	60
26	72	1,120	295	760	372	1,120	760	201	1,500	189	90	75
27	68	1,990	315	586	340	1,770	586	193	810	189	88	72
28	68	3,650	344	508	305	1,120	508	197	547	184	82	72
29	65	2,490	1,180	420	300	1,070	472	193	508	154	82	72
30	65	3,240	2,860	315	-------	2,320	404	193	760	144	82	72
31	65	-------	3,240	305	-------	1,500	-------	172	-------	134	96	-------

NOTE—Discharge Dec. 20-25, Jan. 6, 12, 29, Feb. 1-3, 27, 29 and Mar. 1 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Brokenstraw Creek at Youngsville and French Creek at Saegertown.

Monthly discharge of Oil Creek near Rouseville, for the year ending Sept. 30, 1928

(Drainage area 330 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	180	57	79.3	0.240	0.28
November	4,330	82	978	2.96	3.30
December	7,150	295	1,420	4.30	4.96
January	3,650	305	762	2.31	2.66
February	2,860	260	702	2.13	2.30
March	4,330	172	850	2.58	2.97
April	2,150	372	786	2.38	2.66
May	715	162	270	.818	.94
June	3,870	154	1,040	3.15	3.51
July	1,840	134	421	1.28	1.48
August	472	82	146	.442	.51
September	93	60	71.1	.215	.24
The Year	7,150	57	626	1.90	25.81

OHIO BASIN—STATION NO. 5

FRENCH CREEK AT KIMMEYTOWN

Location.—At single-span steel highway bridge, Kimmeytown, Erie County, about 4 miles upstream from the mouth of South Branch French Creek and about 5 miles north of Union City.

Drainage Area.—207 square miles.

Records Available.—May 16, 1910, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Edna Capron. Elevation of gage zero 1,235.7 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank begins to overflow at a stage of 8.2 feet; left is high and not subject to overflow. Bed is composed of gravel and boulders. Control for low water is at the first of a series of riffles extending from 10 to 60 feet downstream from the gage; probably shifts occasionally.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 10.28 feet at 6 p. m. December 31 (discharge, about 7,820 second-feet); minimum, 0.56 foot at 8.30 a. m. September 18 (discharge, 11 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined to 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of French Creek at Kimmeytown during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
41	Aug. 27	S. A. Kowalchik	0.91	46.2

Measuremeent made by wading 300 feet downstream from gage.

Daily Mean Gage Height, in feet, of French Creek at Kimmeytown, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.71	0.87	8.75	7.80	3.50	1.77	3.02	1.59	0.88	2.64	0.86	0.72
2	.65	.88	5.48	4.00	4.00	1.76	2.25	1.48	.83	2.14	.80	.85
3	.78	1.09	3.20	3.82	3.95	1.66	2.80	1.38	.96	1.80	.97	.85
4	.78	1.13	2.89	3.75	3.88	1.66	2.22	1.17	1.01	1.56	.91	.82
5	.84	1.15	2.80	3.69	3.89	1.64	2.49	1.19	1.17	1.47	.99	.81
6	.78	1.39	2.28	3.45	3.98	1.80	2.26	1.22	2.15	1.28	1.23	.83
7	.72	1.67	2.40	3.10	4.11	1.66	2.02	1.28	2.80	1.18	1.16	.80
8	.72	1.37	3.56	3.74	5.78	1.66	2.55	1.08	2.10	1.16	1.03	.77
9	.72	1.33	2.70	4.30	5.93	1.50	2.46	1.02	1.89	1.20	.97	.80
10	.75	1.53	2.55	3.95	4.23	1.70	2.40	1.07	1.85	1.22	1.55	.77
11	.68	2.48	2.68	3.68	3.19	1.77	2.55	1.13	1.56	1.12	1.59	.67
12	.73	2.60	4.78	3.73	2.65	2.35	3.01	1.11	1.36	1.11	1.25	.67
13	1.12	2.49	6.35	4.21	2.37	4.37	2.84	1.05	1.18	1.56	1.05	.67
14	1.31	2.00	8.44	4.65	2.38	7.91	2.70	.98	.99	2.64	.99	.63
15	1.30	1.87	5.60	4.50	3.40	4.77	2.97	.92	.96	2.88	.89	.64
16	1.26	1.61	5.25	3.62	3.27	3.32	2.54	.87	.86	2.26	.85	.58
17	1.04	4.45	4.45	3.42	2.80	2.57	2.13	.99	.83	1.66	.90	.61
18	.92	6.15	3.58	2.98	2.49	2.21	1.92	1.04	.91	1.26	1.11	.59
19	.90	4.22	3.09	3.05	2.17	1.99	1.82	1.00	.97	1.47	.74	.60
20	1.90	3.15	2.59	4.15	2.09	1.90	1.45	1.01	1.07	1.43	.82	.73
21	2.80	2.40	2.71	2.90	1.94	1.89	2.47	.94	2.16	1.43	.77	.74
22	2.22	2.12	2.82	2.82	1.98	2.29	4.69	.88	4.46	1.67	.77	.76
23	1.41	4.20	2.82	2.95	1.95	2.87	4.07	.83	3.56	1.65	.84	.74
24	1.20	4.75	2.72	2.91	2.63	3.67	3.22	.82	5.41	1.29	.85	.79
25	1.14	4.61	2.77	2.96	2.75	4.42	2.69	.78	4.46	1.09	.85	.77
26	1.02	4.59	2.73	3.16	2.46	4.97	2.27	.84	2.99	1.01	.94	1.20
27	.95	4.82	2.83	2.95	2.13	5.59	2.03	.72	2.21	.96	.91	1.20
28	.94	5.12	2.72	2.73	1.99	4.02	1.75	.82	1.98	1.59	.92	1.16
29	.80	5.51	4.10	2.66	1.80	3.12	1.79	.87	1.68	1.21	1.05	1.06
30	.87	6.58	6.60	2.60	-------	3.41	1.67	.87	2.42	1.02	.95	.94
31	.88	-------	9.20	3.28	-------	3.17	-------	.89	-------	.99	.97	-------

NOTE—Stage-discharge relation Dec. 4, 5, 21-27, Jan. 3-6, 23 and Jan. 29 to Feb. 8 affected by ice.

Daily discharge, in second-feet, of French Creek at Kimmeytown, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	39	5,800	4,590	320	260	700	215	40	540	37	18
2	14	40	2,330	1,250	300	260	418	180	31	382	26	35
3	24	87	790	1,100	280	230	620	155	57	275	59	35
4	24	96	600	1,000	300	230	400	105	68	200	46	30
5	33	100	500	900	600	230	505	110	105	178	64	28
6	24	158	435	800	550	275	418	117	382	131	119	31
7	18	230	470	745	550	230	335	131	620	107	103	26
8	18	153	1,010	1,070	1,800	230	540	84	365	103	73	23
9	18	143	580	1,440	2,690	185	488	71	305	112	59	26
10	21	200	540	1,250	1,370	245	470	82	290	117	200	23
11	15	505	580	1,070	790	260	540	96	200	94	215	15
12	19	540	1,790	1,070	540	452	700	91	150	91	124	15
13	94	505	3,140	1,370	452	1,510	620	78	107	200	78	15
14	138	235	5,310	1,650	470	4,710	580	62	64	540	64	13
15	136	290	2,420	1,580	895	1,790	700	48	57	660	42	14
16	126	215	2,080	1,010	840	840	505	39	37	418	35	11
17	75	1,510	1,510	895	620	540	382	64	31	230	44	12
18	48	2,960	1,010	700	505	400	305	75	46	126	91	12
19	44	1,370	745	700	382	335	275	66	59	178	20	12
20	205	790	540	1,370	365	305	172	68	82	168	30	19
21	620	470	480	660	320	305	488	53	382	168	23	20
22	400	365	440	620	335	435	1,720	40	1,580	230	23	22
23	162	1,370	400	600	320	660	1,310	31	1,010	230	33	20
24	112	1,790	380	660	540	1,070	790	30	2,240	134	35	25
25	98	1,650	360	700	620	1,510	580	24	1,580	87	35	23
26	71	1,650	380	790	488	1,930	418	33	700	68	53	112
27	55	1,790	380	700	382	2,420	350	18	400	57	46	112
28	53	2,000	580	580	335	1,250	260	30	335	215	48	103
29	26	2,330	1,310	550	275	745	275	39	245	114	78	80
30	39	3,320	3,320	440	-------	895	230	39	470	71	55	53
31	40	-------	6,320	360	-------	790	-------	42	-------	64	59	-------

NOTE—Discharge Dec. 4, 5, 21-27, Jan. 3-6, 23 and Jan. 29 to Feb. 8 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for French Creek at Saegertown, Brokenstraw Creek at Youngsville, Tionesta Creek at Nebraska and Oil Creek near Rouseville.

Monthly discharge of French Creek at Kimmeytown, for the year ending Sept. 30, 1928

(Drainage area 207 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	620	14	93.1	0.450	0.52
November	3,320	39	900	4.35	4.85
December	6,320	360	1,500	7.25	8.36
January	4,590	360	1,040	5.02	5.79
February	2,690	275	629	3.04	3.28
March	4,710	185	823	3.98	4.59
April	1,720	172	536	2.59	2.89
May	215	18	74.7	.361	.42
June	2,240	31	401	1.94	2.16
July	660	57	203	.981	1.13
August	215	20	65.1	.314	.36
September	112	11	32.8	.158	.18
The Year	6,320	11	525	2.54	34.53

OHIO BASIN—STATION NO. 6

FRENCH CREEK AT SAEGERTOWN

Location.—At single-span steel highway bridge, at lower end of Saegertown, Crawford County, about one-half mile upstream from the mouth of Woodcock Creek.

Drainage Area.—586 square miles.

Records Available.—April 23, 1921, to September 30, 1928. Discharge measurements have been made at the station since August 5, 1915.

Gage.—Standard chain attached to upstream side of bridge; read by Frank L. Peters.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Right bank becomes inundated at a stage of 13 feet; left is high and not subject to overflow. Bed is composed of gravel and boulders. Control is at a riffle about 700 feet downstream from the gage, at the head of an island; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 12.80 feet at 2 p. m. January 1 (discharge, about 12,100 second-feet); minimum, 2.40 feet from 5 p. m. October 2 to 7 a. m. October 3 (discharge, 71 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 500 second-feet and fairly well defined between 500 and 9,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of French Creek at Saegertown during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
29	Aug. 28	S. A. Kowalchik	2.63	146

Measurement made by wading 500 feet downstream from gage.

Daily Mean Gage Height, in feet, of French Creek at Saegertown, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.44	2.60	11.35	12.40	4.05	3.71	5.60	3.72	2.81	4.90	2.95	2.58
2	2.42	2.60	11.80	10.28	3.89	3.64	5.14	3.60	2.80	4.26	2.91	2.58
3	2.43	2.66	8.73	6.90	3.78	3.54	4.80	3.48	2.80	3.80	2.87	2.56
4	2.58	2.88	5.90	5.64	3.85	3.42	5.46	3.38	2.90	4.38	2.89	2.59
5	2.60	2.98	4.90	5.65	5.10	3.42	5.08	3.30	3.35	4.40	2.92	2.56
6	2.56	3.02	4.48	5.56	5.64	3.41	4.50	3.24	5.65	4.55	3.18	2.58
7	2.53	3.09	4.38	5.22	5.15	3.39	4.08	3.21	6.30	3.80	3.24	2.56
8	2.52	3.16	4.88	5.92	7.10	3.32	4.58	3.18	5.21	3.36	3.06	2.60
9	2.52	3.13	4.84	6.58	8.75	3.40	4.64	3.14	4.78	3.26	2.92	2.58
10	2.48	3.16	4.00	6.56	8.62	3.40	4.54	3.07	5.42	3.65	2.84	2.58
11	2.50	3.28	4.18	6.01	6.82	3.43	4.54	3.01	4.65	3.74	3.05	2.56
12	2.55	3.80	5.70	5.91	5.40	4.30	4.78	2.98	3.64	3.52	3.31	2.51
13	2.92	3.73	7.70	5.92	4.72	5.95	5.26	2.97	3.45	3.82	3.05	2.52
14	3.14	3.67	9.85	6.40	4.92	8.90	4.70	2.94	3.27	5.08	2.88	2.50
15	3.02	3.33	10.60	6.25	6.20	10.05	5.07	2.90	3.14	5.05	2.79	2.49
16	2.95	3.30	8.98	5.81	5.99	7.40	4.64	2.86	3.03	4.43	2.77	2.48
17	2.86	5.50	7.70	5.30	5.30	5.25	4.18	2.90	2.94	3.90	2.74	2.48
18	2.79	7.82	6.33	5.00	4.70	4.40	4.04	3.28	3.02	3.51	2.70	2.42
19	2.73	8.02	5.00	4.80	4.18	4.02	3.86	3.81	3.26	3.85	2.68	2.42
20	2.70	6.10	4.52	6.32	4.02	4.02	3.71	3.68	3.24	4.18	2.66	2.45
21	3.10	5.00	4.62	4.95	3.78	4.25	3.75	3.30	3.53	3.66	2.66	2.50
22	3.72	5.24	4.72	4.15	3.79	4.44	6.40	3.08	6.55	3.57	2.66	2.54
23	3.52	6.02	4.69	4.51	4.11	4.84	7.00	2.93	5.98	3.80	2.66	2.51
24	3.14	6.98	4.55	4.75	4.89	5.16	6.00	2.88	6.15	3.59	2.64	2.53
25	2.93	8.32	4.41	5.30	4.76	5.82	5.10	2.83	7.70	3.30	2.66	2.56
26	2.82	7.95	4.10	5.32	4.27	6.06	4.58	2.80	6.40	3.18	2.70	2.60
27	2.74	7.46	4.02	5.08	4.29	6.68	4.22	2.81	4.62	3.09	2.68	2.75
28	2.68	9.12	4.18	4.78	3.86	6.95	3.99	2.82	4.05	3.22	2.66	2.86
29	2.65	9.80	5.80	4.49	3.82	5.78	3.79	2.86	3.82	3.36	2.65	2.82
30	2.60	9.90	8.70	4.25	-------	6.00	3.70	2.91	4.40	3.15	2.66	2.76
31	2.56	-------	10.78	4.11	-------	6.37	-------	2.86	-------	3.01	2.63	-------

NOTE—Stage-discharge relation Dec. 21-25, Jan. 5, 6 and Mar. 5-7 affected by ice.

Daily discharge, in second-feet, of French Creek at Saegertown, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82	133	9,920	11,500	975	780	2,330	780	226	1,680	300	126
2	77	133	10,500	8,250	910	748	1,860	715	221	1,190	278	126
3	79	158	5,970	3,720	845	682	1,590	650	221	845	257	119
4	126	262	2,630	2,330	878	585	2,230	585	272	1,270	267	130
5	133	317	1,680	2,200	1,860	550	1,860	520	552	1,270	283	119
6	119	328	1,350	2,000	2,330	550	1,350	488	2,330	1,430	455	126
7	109	390	1,270	1,950	1,950	500	1,040	455	3,060	845	488	119
8	106	422	1,680	2,630	3,950	520	1,430	455	1,950	552	359	133
9	106	422	1,590	3,390	6,110	585	1,490	422	1,590	488	283	126
10	93	422	975	3,390	5,840	585	1,350	359	2,130	748	241	126
11	99	520	1,110	2,730	3,610	618	1,350	328	1,430	812	359	119
12	116	845	2,430	2,630	2,130	1,190	1,590	317	748	650	520	102
13	283	812	4,670	2,630	1,510	2,730	2,040	311	618	845	359	106
14	422	748	7,516	3,170	1,680	6,250	1,510	294	488	1,860	262	99
15	328	552	8,700	2,950	2,950	7,800	1,860	272	422	1,770	216	96
16	300	520	6,390	2,530	2,730	4,310	1,430	252	359	1,270	207	93
17	252	2,230	4,670	2,040	2,040	1,950	1,110	272	294	910	193	93
18	216	4,800	3,060	1,770	1,510	1,270	975	520	328	650	174	77
19	188	5,060	1,770	1,590	1,110	975	878	845	488	878	166	77
20	174	2,840	1,350	3,060	975	975	780	780	488	1,110	158	85
21	390	1,770	1,300	1,770	845	1,110	812	520	682	748	158	99
22	780	1,950	1,300	1,110	845	1,270	3,170	390	3,390	682	158	113
23	650	2,730	1,200	1,350	1,040	1,590	3,830	289	2,730	845	158	102
24	422	3,830	1,100	1,590	1,680	1,950	2,730	262	2,950	715	149	109
25	289	5,450	1,100	2,040	1,590	2,530	1,860	236	4,670	520	158	119
26	231	5,060	1,040	2,040	1,190	2,840	1,430	221	3,170	455	174	133
27	193	4,430	975	1,860	1,190	3,500	1,110	226	1,430	390	166	198
28	166	6,530	1,110	1,590	878	3,830	975	231	975	455	158	252
29	154	7,510	2,530	1,350	845	2,530	845	252	845	552	154	231
30	133	7,650	5,970	1,110	-------	2,730	780	278	1,270	422	158	202
31	119	-------	9,000	1,040	-------	3,170	-------	252	-------	328	145	-------

NOTE—Discharge Dec. 21-25, Jan. 5, 6 and Mar. 5-7 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for French Creek at Kimmeytown, Brokenstraw Creek at Youngsville and Oil Creek near Rouseville.

Monthly discharge of French Creek at Saegertown, for the year ending Sept. 30, 1928

(Drainage area 586 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	780	77	224	0.382	0.44
November	7,650	133	2,290	3.91	4.36
December	10,500	975	3,410	5.82	6.71
January	11,500	1,040	2,690	4.59	5.29
February	6,110	845	1,930	3.29	3.55
March	7,800	500	1,970	3.36	3.87
April	3,830	780	1,580	2.70	3.01
May	845	221	412	.703	.81
June	4,670	221	1,340	2.29	2.56
July	1,860	328	877	1.50	1.73
August	488	145	244	.416	.48
September	252	77	125	.213	.24
The Year	11,500	77	1,420	2.42	33.05

OHIO BASIN—STATION NO. 7

CUSSEWAGO CREEK NEAR MEADVILLE

Location.—At single-span steel highway bridge near Jones' Farm, about four and one-half miles northwest of Meadville, Crawford County.

Drainage Area.—88 square miles.

Records Available.—May 3, 1910, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Thomas McCay. Elevation of gage zero 1,071.77 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are subject to overflow; the right becomes inundated at a stage of 10.5 feet and the left at 11.2 feet. Bed is composed of sand, gravel and boulders. Low-water control is a gravel bar 5 feet downstream from the gage; practically permanent. Control for medium and high stages is an old dam about 4 miles downstream from the station.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 11.72 feet at noon December 1 (discharge, about 1,330 second-feet); minimum, 0.61 foot from 7 a. m. September 18 to 7 a. m. September 19 (discharge, 2.1 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 900 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Cussewago Creek near Meadville during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
45	Aug. 28	S. A. Kowalchik	0.96	6.66

Measurement made by wading 20 feet upstream from gage.

Daily Mean Gage Height, in feet, of Cussewago Creek near Meadville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.87	1.14	11.38	10.49	3.58	2.88	7.18	2.77	1.18	5.07	1.52	0.86
2	.86	1.18	10.06	9.76	3.33	2.84	5.70	2.52	1.18	4.07	1.37	.81
3	.80	1.38	8.68	9.11	3.20	2.67	4.45	2.24	1.19	2.70	1.28	.80
4	1.33	1.73	7.06	8.48	3.28	2.47	4.50	2.04	1.40	2.11	1.23	.76
5	1.44	2.84	5.40	7.62	6.54	2.43	4.64	1.88	2.50	3.05	2.87	.76
6	1.25	3.80	4.13	5.95	7.71	2.49	3.70	1.76	7.63	3.69	4.05	.77
7	1.08	3.66	3.85	5.12	8.10	2.42	3.10	1.66	7.86	3.57	3.99	.84
8	.94	3.12	4.71	5.87	8.76	2.32	3.44	1.57	7.82	2.59	2.54	.84
9	.92	2.80	5.08	7.34	10.24	2.36	3.76	1.48	6.38	2.01	1.88	.82
10	.95	2.76	4.35	7.98	9.73	2.53	3.74	1.42	6.66	3.44	1.53	.76
11	.86	2.89	3.70	7.90	8.85	2.70	3.96	1.36	6.54	4.19	1.35	.75
12	.94	2.88	4.75	6.50	7.34	3.95	4.20	1.31	4.01	4.07	1.21	.71
13	1.76	2.78	7.42	5.76	5.20	6.00	4.44	1.24	2.70	3.46	1.14	.69
14	2.28	2.78	10.20	5.60	4.91	9.00	3.95	1.18	2.16	4.98	1.07	.68
15	2.90	2.35	10.03	5.14	6.92	9.69	4.42	1.16	1.86	5.09	1.01	.66
16	2.90	2.43	8.90	4.42	7.80	8.60	4.05	1.14	1.65	4.53	.96	.64
17	2.10	5.80	8.72	3.91	7.52	6.85	3.20	1.27	1.46	3.51	.91	.63
18	1.71	8.12	8.50	4.02	5.70	3.94	2.91	3.60	1.83	2.57	.95	.61
19	1.49	9.53	7.88	4.04	4.54	3.37	2.65	6.30	3.08	2.33	.93	.62
20	1.53	8.77	5.50	6.06	4.00	3.28	2.38	4.92	3.44	4.19	.91	.68
21	1.89	7.20	4.66	6.92	3.58	3.36	2.35	2.92	3.00	3.59	.87	.78
22	2.06	5.40	4.66	7.03	3.09	4.27	6.00	2.11	6.20	2.94	.85	.82
23	1.78	5.78	4.58	6.18	3.42	5.10	7.81	1.71	8.08	2.74	.97	.78
24	1.53	6.70	4.56	5.16	5.54	5.11	7.92	1.44	8.00	2.47	.98	.75
25	1.37	8.10	4.58	6.40	6.36	4.74	5.70	1.33	4.97	1.96	1.00	.78
26	1.25	9.25	4.51	7.29	5.26	4.66	4.12	1.26	2.97	1.65	1.29	.90
27	1.18	8.78	4.27	7.62	3.80	5.55	3.38	1.21	2.43	1.54	1.08	1.03
28	1.11	8.60	3.86	6.65	3.07	6.31	2.95	1.16	2.14	1.69	.96	1.04
29	1.06	9.70	5.80	5.45	2.80	4.90	2.68	1.22	2.07	2.70	.88	1.02
30	1.02	9.80	9.10	4.48	-------	6.34	2.60	1.39	3.57	2.32	.83	.97
31	1.00	-------	10.38	3.88	-------	7.36	-------	1.31	-------	1.83	.84	-------

NOTE—Stage-discharge relation Dec. 8-10, 22-27, Feb. 6-8, Mar. 1-3, 6 and 7 affected by ice.

Daily discharge, in second-feet, of Cussewago Creek near Meadville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.9	9.8	1,250	1,040	103	60	393	60	11	193	18	4.8
2	4.8	11	940	872	87	55	234	50	11	133	14	4.1
3	4.0	15	648	725	82	50	151	40	11	58	13	4.0
4	14	24	379	610	87	48	157	34	15	35	12	3.5
5	18	64	213	453	305	48	163	29	50	72	64	3.5
6	12	115	133	257	400	46	109	24	453	109	127	3.6
7	8.6	109	115	193	360	44	77	22	502	103	127	4.5
8	6.0	77	120	249	400	42	92	19	485	54	52	4.5
9	5.7	62	100	407	970	44	115	17	295	32	29	4.2
10	6.2	60	100	520	849	52	109	16	328	92	19	3.5
11	4.8	67	109	502	667	58	127	14	305	139	14	3.4
12	6.6	67	175	305	407	127	139	13	127	133	11	3.0
13	24	62	422	241	199	257	151	12	58	97	9.8	2.8
14	42	62	970	227	181	705	127	11	36	187	8.4	2.7
15	67	44	920	193	352	849	151	10	28	193	7.2	2.5
16	67	48	686	151	485	629	127	9.8	22	157	6.3	2.3
17	35	241	648	121	437	340	82	12	17	97	5.5	2.3
18	23	538	610	127	234	121	67	103	28	52	6.2	2.1
19	18	806	502	127	157	92	56	285	77	44	5.8	2.2
20	19	667	220	265	127	87	46	181	92	139	5.5	2.7
21	29	393	169	352	103	92	44	67	72	103	4.9	3.7
22	34	213	150	365	77	145	257	35	275	70	4.6	4.2
23	26	241	140	275	92	193	485	23	538	60	6.5	3.7
24	19	328	130	199	220	193	502	16	520	48	6.7	3.4
25	14	538	120	295	295	169	234	14	187	30	7.0	3.7
26	12	745	120	407	206	169	133	12	70	22	13	5.4
27	11	667	110	453	115	227	92	11	48	19	8.6	7.6
28	9.2	629	121	316	77	285	70	10	36	23	6.3	7.8
29	8.2	849	241	213	62	181	58	11	34	58	5.1	7.4
30	7.4	872	725	157	-------	285	54	15	103	42	4.4	6.5
31	7.0	-------	1,010	121	-------	422	-------	13	-------	28	4.5	-------

NOTE—Discharge Dec. 8-10, 22-27, Feb.6-8, Mar. 1-3, 6 and 7 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for French Creek at Saegertown, Oil Creek near Rouseville and Shenango River near Jamestown.

Monthly discharge of Cussewago Creek near Meadville, for the year ending Sept. 30, 1928

(Drainage area 88 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	67	4.0	18.2	0.207	0.24
November	872	9.8	287	3.26	3.64
December	1,250	100	397	4.51	5.20
January	1,040	121	346	3.93	4.53
February	970	62	281	3.19	3.44
March	849	42	197	2.24	2.58
April	502	44	153	1.74	1.94
May	285	9.8	38.3	.435	.50
June	538	11	161	1.83	2.04
July	193	19	84.6	.961	1.11
August	127	4.4	20.2	.230	.27
September	7.8	2.1	3.99	.045	.05
The Year	1,250	2.1	165	1.88	25.54

OHIO BASIN—STATION NO. 8

ALLEGHENY RIVER AT FRANKLIN

Location.—At four-span steel highway bridge, Eighth Street, Franklin, Venango County.

Drainage Area.—6,010 square miles.

Records Available.—April 1, 1905, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge in first span from left end; read by W. C. Rivers. Elevation of gage zero 958.26 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge.

Channel and Control.—Both banks are high and do not overflow until a stage of 22 feet is reached. Bed is composed of gravel and boulders. Control is at a riffle, 200 feet long, about 1,000 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 17.22 feet at 1 p. m. December 1 (discharge, 107,000 second-feet); minimum, 0.08 foot from 6 p. m. October 1 to 8 a. m. October 3 (discharge, 775 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 800 and 110,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh, Pennsylvania.

Discharge measurements of Allegheny River at Franklin during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
24	Aug. 25	S. A. Kowalchik	0.69	1,650

Daily Mean Gage Height, in feet, of Allegheny River at Franklin, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.08	0.66	16.55	10.35	2.34	2.74	6.49	3.64	1.41	4.23	1.20	0.52
2	.08	.76	15.24	9.39	2.28	2.64	5.66	3.57	1.32	4.03	1.10	.47
3	.10	.92	12.75	7.60	2.28	2.40	5.08	3.34	1.23	3.46	1.02	.42
4	.30	1.32	9.80	6.10	2.38	2.06	5.37	3.11	1.30	3.36	.99	.36
5	.35	1.77	7.60	5.23	3.09	1.74	5.51	2.87	2.47	4.01	1.04	.34
6	.28	2.32	6.33	4.79	3.96	1.71	5.04	2.65	6.87	5.11	1.58	.31
7	.22	2.40	5.48	4.66	3.85	1.69	4.62	2.47	9.19	4.06	1.78	.34
8	.28	2.22	4.96	4.72	4.68	1.72	5.47	2.32	7.97	3.35	1.51	.37
9	.32	2.06	4.76	5.15	6.90	1.85	6.67	2.14	6.77	2.91	1.44	.34
10	.28	1.98	4.30	5.16	7.30	1.96	6.27	1.99	6.82	3.26	1.40	.32
11	.21	2.05	4.10	4.79	6.40	2.04	5.77	1.89	6.37	2.89	2.22	.28
12	.28	2.84	4.52	4.46	5.20	2.60	5.39	1.77	5.17	2.68	1.91	.24
13	1.00	3.23	6.21	4.36	4.25	3.89	5.13	1.67	4.29	2.55	1.65	.22
14	1.06	3.08	11.10	4.70	4.10	8.15	4.79	1.59	3.65	3.22	1.45	.18
15	1.02	2.74	11.05	4.90	5.15	8.65	4.89	1.54	3.23	3.56	1.22	.14
16	.98	2.40	10.70	4.62	6.35	7.60	4.76	1.45	2.85	3.10	1.25	.13
17	.96	6.45	10.90	4.32	5.70	5.95	4.37	1.36	2.53	2.62	1.03	.12
18	.84	13.20	9.50	4.09	4.95	4.82	4.03	1.91	2.42	2.22	.94	.12
19	.73	10.78	7.90	3.90	4.40	4.14	3.71	2.41	2.87	2.06	.85	.11
20	.72	8.82	6.46	5.05	3.77	3.68	3.42	3.03	2.68	2.41	.78	.20
21	1.25	7.15	5.77	5.20	3.04	3.38	3.27	2.79	2.72	2.26	.74	.22
22	2.60	6.05	5.12	4.01	2.66	3.42	5.07	2.41	4.62	2.34	.76	.18
23	2.28	5.50	4.58	3.60	3.01	3.75	6.87	2.13	5.22	3.16	.74	.18
24	1.89	5.65	4.20	3.80	3.96	4.34	6.62	1.85	8.37	3.26	.71	.18
25	1.53	8.20	3.78	4.60	3.86	5.77	5.78	1.69	8.57	2.61	.64	.19
26	1.26	8.08	3.35	4.55	3.42	7.17	4.99	1.57	6.77	2.12	.61	.20
27	1.07	9.15	3.04	4.04	2.98	8.57	4.47	1.49	5.47	1.86	.60	.22
28	.94	11.60	2.94	3.94	2.61	8.69	4.03	1.48	4.53	1.70	.58	.26
29	.83	11.60	3.98	3.42	2.66	7.62	3.75	1.52	3.99	1.62	.56	.32
30	.74	11.90	7.10	2.82	-------	8.02	3.58	1.53	3.90	1.50	.52	.34
31	.65	-------	8.70	2.36	-------	7.41	-------	1.53	-------	1.32	.66	-------

NOTE—Stage-discharge relation Feb. 1-3 affected by ice.

Daily discharge, in second-feet, of Allegheny River at Franklin, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	775	1,580	101,000	53,100	5,500	7,920	27,000	11,500	3,400	14,300	2,810	1,340
2	775	1,760	90,100	46,100	5,500	7,520	22,200	11,500	3,100	13,300	2,550	1,260
3	775	2,080	70,900	33,600	5,500	6,800	18,800	10,300	2,960	11,100	2,300	1,180
4	1,040	3,100	48,900	24,600	6,800	5,700	20,400	9,500	3,100	10,700	2,300	1,110
5	1,110	4,650	33,600	19,300	9,500	4,350	21,000	8,700	7,150	13,300	2,420	1,110
6	1,040	6,400	25,800	17,300	13,300	4,350	18,300	7,520	29,400	18,800	4,000	1,040
7	900	6,800	21,000	16,800	12,500	4,350	16,300	7,150	44,700	13,800	4,650	1,110
8	1,040	6,040	18,300	16,800	16,800	4,350	21,000	6,400	36,300	10,700	3,700	1,110
9	1,040	5,700	17,300	19,300	29,400	4,650	28,200	5,700	28,800	8,700	3,550	1,110
10	1,040	5,350	14,800	19,300	31,800	5,350	25,800	5,350	28,800	10,300	3,400	1,040
11	900	5,350	13,800	17,300	26,400	5,350	22,800	5,000	26,400	8,700	6,040	1,040
12	1,040	8,300	15,800	15,800	19,300	7,520	20,400	4,650	19,300	7,920	5,000	970
13	2,300	9,900	25,200	15,300	14,300	12,900	18,800	4,350	14,800	7,520	4,000	900
14	2,420	9,500	58,000	16,800	13,800	37,700	17,300	4,000	11,500	9,900	3,550	900
15	2,300	7,920	57,300	17,800	19,300	41,900	17,800	3,700	9,900	11,500	2,810	842
16	2,300	6,800	55,200	16,300	26,400	33,600	17,300	3,550	8,300	9,500	2,960	842
17	2,190	26,400	56,600	14,800	22,200	24,000	15,300	3,250	7,150	7,520	2,420	775
18	1,970	74,100	46,800	13,800	18,300	17,300	13,300	5,000	6,800	6,040	2,190	775
19	1,760	55,900	35,600	12,900	15,300	13,800	12,000	6,800	8,700	5,700	1,970	775
20	1,670	41,900	27,000	18,300	12,500	12,000	10,700	9,100	7,920	6,800	1,860	900
21	2,960	31,200	22,800	19,300	9,100	10,700	10,300	8,300	7,920	6,400	1,760	900
22	7,520	24,000	18,800	13,300	7,920	10,700	18,800	6,800	16,300	6,400	1,760	900
23	6,400	21,000	16,300	11,500	9,100	12,500	29,400	5,700	19,300	9,900	1,760	900
24	5,000	21,600	14,300	12,500	13,300	14,800	27,600	4,650	39,100	10,300	1,670	900
25	3,700	37,700	12,500	16,300	12,900	22,800	22,800	4,350	40,500	7,520	1,580	900
26	2,960	37,000	10,700	16,300	10,700	31,200	18,300	4,000	28,800	5,700	1,500	900
27	2,420	44,700	9,100	13,300	9,100	40,500	15,800	3,700	21,000	5,000	1,500	900
28	2,190	61,500	8,700	12,900	7,520	41,200	13,300	3,700	15,800	4,350	1,500	970
29	1,970	61,500	13,300	10,700	7,920	33,600	12,500	3,700	13,300	4,000	1,420	1,040
30	1,760	63,700	30,600	8,300	-------	36,300	11,500	3,700	12,900	3,700	1,340	1,110
31	1,580	-------	41,200	6,800	-------	32,400	-------	3,700	-------	3,100	1,580	-------

NOTE—Discharge Feb. 1-3 estimated because of ice, from weather records, study of gage height graph, discharge of Allegheny River at Red House and Kittanning and comparison with similar studies for French Creek at Kimmeytown.

Monthly discharge of Allegheny River at Franklin, for the year ending Sept. 30, 1928

(Drainage area 6,010 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	7,520	775	2,160	0.359	0.41
November	74,100	1,580	23,100	3.84	4.28
December	101,000	8,700	33,300	5.54	6.39
January	53,100	6,800	18,300	3.04	3.50
February	31,800	5,500	14,200	2.36	2.54
March	41,900	4,350	17,700	2.95	3.40
April	29,400	10,300	18,800	3.13	3.49
May	11,500	3,250	5,980	.995	1.15
June	44,700	2,960	17,400	2.90	3.24
July	18,800	3,100	8,790	1.46	1.68
August	6,040	1,340	2,640	.439	.51
September	1,340	775	985	.164	.18
The Year	101,000	775	13,600	2.26	30.77

OHIO BASIN—STATION NO. 9

CLARION RIVER NEAR PINEY

Location.—At hydro-electric plant dam of the Penn Public Service Corporation about two and one-half miles upstream from Piney, Clarion County.

Drainage Area.—980 square miles.

Records Available.—October 1, 1924, to September 30, 1928.

Computations of Discharge.—From records of turbine discharge, rated gate openings, flow over dam and changes in amount of storage.

Cooperation.—Record furnished by Penn Public Service Corporation, Johnstown, Pennsylvania.

Daily discharge, in second-feet, of Clarion River near Piney, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	58	215	7,053	4,773	837	1,237	4,887	3,436	716	2,406	378	444
2	35	202	5,519	3,209	842	1,069	3,927	2,842	615	1,823	470	278
3	104	333	4,340	2,610	765	844	3,196	2,381	579	1,349	481	208
4	40	1,113	3,233	2,005	775	880	3,631	2,066	912	1,981	377	247
5	81	1,519	2,708	1,768	1,543	752	3,211	1,770	7,289	3,969	370	197
6	139	1,422	2,380	1,710	2,378	800	2,852	1,705	16,487	7,004	454	174
7	116	1,136	2,745	1,816	1,767	769	2,567	1,395	11,486	4,320	742	174
8	104	945	1,599	1,982	2,408	694	6,856	1,181	6,434	3,207	592	139
9	69	783	2,174	1,896	4,013	792	6,012	1,113	5,491	2,325	417	174
10	116	691	1,389	1,845	3,337	694	4,658	967	5,560	2,148	404	148
11	86	782	1,574	1,473	2,693	868	3,669	908	4,697	1,827	660	192
12	185	1,180	3,044	1,428	2,319	1,389	3,462	809	3,596	1,499	999	104
13	222	1,156	5,942	1,416	1,908	2,990	4,038	785	2,796	1,325	579	104
14	751	943	13,836	1,577	1,883	6,105	3,251	677	2,383	1,314	451	150
15	440	802	9,305	1,705	5,234	5,030	3,973	630	2,221	1,354	312	104
16	255	828	11,476	1,369	4,081	3,553	3,275	587	1,678	1,448	289	125
17	174	3,679	12,453	1,277	3,105	2,704	2,943	802	1,451	444	289	104
18	155	9,348	7,149	1,335	2,673	2,498	2,573	2,565	1,645	726	231	299
19	214	4,840	4,723	1,308	2,169	2,132	2,272	3,208	3,027	733	241	139
20	783	2,973	3,822	2,196	1,787	1,856	1,913	2,600	2,623	1,144	231	139
21	1,715	2,574	3,070	1,468	1,358	1,587	1,730	2,471	2,210	1,375	243	183
22	1,002	2,228	2,614	1,172	1,226	1,831	3,301	1,850	4,679	1,481	392	139
23	718	1,922	2,256	1,612	1,287	2,128	4,696	1,543	4,131	2,045	554	139
24	509	1,972	1,831	1,567	1,823	2,686	4,183	1,303	3,567	1,561	893	139
25	408	3,507	1,448	1,798	1,756	4,198	3,563	1,125	2,963	1,142	382	142
26	359	2,789	1,127	1,649	1,201	4,970	3,060	1,007	2,708	864	382	104
27	272	4,009	1,165	1,326	1,032	6,466	2,453	994	2,104	755	417	104
28	287	6,435	1,021	1,076	1,219	5,946	2,527	937	1,731	676	295	69
29	208	7,024	1,666	1,042	1,223	4,292	2,419	919	1,702	625	245	104
30	209	6,603	3,918	741	-------	6,271	3,562	900	2,517	565	249	104
31	220	-------	4,006	730	-------	6,739	-------	793	-------	387	347	-------

Monthly discharge of Clarion River near Piney, for the year ending Sept. 30, 1928

(Drainage area 980 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,715	35	324	0.331	0.38
November	9,348	202	2,470	2.52	2.81
December	13,836	1,021	4,210	4.30	4.96
January	4,773	730	1,710	1.74	2.01
February	5,234	765	2,020	2.06	2.22
March	6,739	694	2,730	2.79	3.22
April	6,856	1,730	3,490	3.56	3.97
May	3,436	587	1,490	1.52	1.75
June	16,487	579	3,670	3.74	4.17
July	7,004	387	1,740	1.78	2.05
August	999	231	431	.440	.51
September	444	69	162	.165	.18
The Year	16,487	35	2,080	2.07	28.23

OHIO BASIN—STATION NO. 10

RED BANK CREEK AT SAINT CHARLES

Location.—At single-span steel railroad bridge, Saint Charles, Clarion County.

Drainage Area.—540 square miles.

Records Available.—October 19, 1909, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by W. H. Bish. Elevation of gage zero 976.24 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of rocks and fairly regular. Control is at the first of a series of riffles, where the bed is composed of large boulders and ledge, about 200 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 12.80 feet at 6 a. m. December 14 (discharge, about 21,000 second-feet); minimum, 0.96 foot at 4 p. m. October 4 and 5 (discharge, 45 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,000 second-feet and fairly well defined between 1,000 and 10,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Red Bank Creek at Saint Charles during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
34	Aug. 24	S. A. Kowalchik	1.70	224

Measurement made by wading 200 feet upstream from gage.

Daily Mean Gage Height, in feet, of Red Bank Creek at Saint Charles, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.11	1.46	5.75	3.72	2.17	2.63	4.55	4.55	1.83	4.70	2.31	1.91
2	1.00	1.48	5.10	3.30	2.19	2.51	4.38	4.20	1.85	4.38	2.23	1.83
3	1.03	1.82	4.70	2.78	2.15	2.37	4.15	3.60	1.81	4.02	1.93	1.72
4	.97	3.00	4.05	2.66	2.32	2.35	3.38	3.27	1.90	3.72	1.85	1.60
5	.98	3.17	3.55	2.49	4.10	2.35	3.19	3.04	5.10	3.55	1.75	1.44
6	1.05	2.95	2.90	2.58	3.42	2.23	2.89	2.66	7.00	4.60	1.80	1.35
7	.99	2.69	2.77	2.62	3.37	2.15	3.32	2.40	6.20	5.15	1.85	1.37
8	1.01	2.61	2.66	2.67	4.35	2.10	4.70	2.31	5.75	5.80	1.89	1.33
9	1.04	2.54	2.77	2.87	4.28	2.08	4.75	2.31	5.95	5.35	1.83	1.28
10	1.06	2.47	2.58	2.82	3.88	2.11	4.35	2.23	5.40	3.80	1.80	1.25
11	1.00	2.39	3.15	2.65	3.58	2.24	3.90	2.11	4.85	3.10	2.90	1.22
12	1.21	2.28	4.55	2.49	3.36	2.90	3.68	1.54	4.15	2.77	2.79	1.19
13	1.60	2.14	5.70	2.53	3.15	4.25	4.25	1.85	3.35	2.62	2.50	1.15
14	1.95	2.07	10.61	2.61	3.00	5.77	4.55	1.85	3.65	2.61	2.11	1.17
15	1.78	2.01	7.20	2.53	4.67	4.57	4.32	1.84	2.90	2.53	1.91	1.13
16	1.46	2.20	9.00	2.36	5.02	4.72	3.90	1.85	2.60	2.41	1.80	1.09
17	1.33	4.40	8.42	2.35	4.55	4.50	3.42	1.84	2.44	2.34	1.65	1.11
18	1.36	5.10	5.75	2.39	3.75	3.92	3.21	3.55	2.72	2.21	1.71	1.23
19	2.00	3.45	4.70	2.39	3.38	3.40	3.06	4.70	3.40	2.01	1.64	1.19
20	4.30	3.18	4.62	2.43	3.05	2.80	2.82	3.60	3.45	3.30	1.66	1.25
21	3.65	2.93	3.75	2.36	2.85	2.88	2.70	2.73	3.00	3.75	1.65	1.31
22	2.90	2.74	3.16	2.37	2.42	3.19	3.38	2.40	3.80	3.35	1.75	1.37
23	2.41	2.62	2.92	2.47	2.86	3.42	4.65	2.28	4.80	3.25	1.90	1.81
24	2.21	2.45	2.75	2.59	2.69	3.32	4.48	2.21	4.10	3.03	1.78	1.25
25	2.03	3.25	2.48	2.75	2.48	3.38	4.20	2.12	3.80	2.71	1.65	1.16
26	1.41	3.24	2.27	2.76	2.49	3.42	3.92	1.99	3.54	2.46	1.71	1.05
27	1.37	3.00	2.28	2.64	2.71	4.70	3.64	1.99	2.93	2.35	1.63	1.04
28	1.33	5.45	2.23	2.47	2.64	4.60	3.50	1.91	2.58	2.29	1.45	1.08
29	1.26	6.25	2.57	2.34	2.63	3.85	4.20	1.87	2.95	2.20	1.44	1.09
30	1.33	6.05	3.85	2.27	-------	6.62	4.85	1.84	4.95	2.12	1.45	1.10
31	1.44	-------	3.90	2.24	-------	6.00	-------	1.84	-------	1.99	1.94	-------

NOTE—Stage-discharge relation Jan. 17-22 affected by ice.

Daily discharge, in second-feet, of Red Bank Creek at Saint Charles, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68	148	5,050	1,670	438	728	2,930	2,930	282	3,090	520	319
2	50	154	3,750	1,230	465	635	2,630	2,330	291	2,630	492	282
3	55	277	3,090	826	438	548	2,330	1,550	273	2,050	328	236
4	46	970	2,050	728	520	548	1,330	1,230	314	1,670	291	192
5	47	1,140	1,550	635	2,190	548	1,140	970	3,750	1,550	248	142
6	58	932	895	696	1,330	492	895	728	7,530	2,930	268	118
7	49	760	793	696	1,330	438	1,230	576	5,850	3,930	291	122
8	52	696	728	728	2,630	410	3,090	520	5,050	5,050	309	112
9	56	664	793	860	2,480	410	3,250	520	5,450	4,290	282	101
10	60	606	696	895	1,920	410	2,630	492	4,290	1,790	268	95
11	50	576	1,140	728	1,550	492	1,920	410	3,250	1,050	895	89
12	87	520	2,930	635	1,330	895	1,670	332	2,330	793	826	83
13	192	438	4,860	664	1,140	2,330	2,330	291	1,330	696	635	76
14	337	385	16,200	696	970	5,050	2,930	291	1,550	696	410	79
15	260	360	7,970	664	3,090	2,930	2,480	286	895	664	319	72
16	148	465	12,300	548	3,580	3,090	1,920	291	696	576	268	64
17	112	2,630	10,700	500	2,930	2,780	1,330	286	606	548	210	68
18	120	3,750	5,050	460	1,790	1,920	1,140	1,550	760	465	232	91
19	360	1,330	3,090	440	1,330	1,330	1,050	3,090	1,330	360	206	83
20	2,480	1,140	2,930	400	970	826	826	1,550	1,330	1,250	214	95
21	1,550	932	1,790	400	860	895	760	793	970	1,790	210	108
22	895	793	1,140	460	576	1,140	1,330	576	1,790	1,330	248	122
23	576	696	895	606	860	1,330	2,930	520	2,480	1,140	314	108
24	465	606	793	696	760	1,230	2,780	465	2,190	970	260	95
25	385	1,140	635	793	635	1,330	2,330	410	1,790	760	210	77
26	133	1,140	492	793	635	1,330	1,920	355	1,440	606	232	58
27	122	970	520	728	760	3,090	1,550	355	932	548	203	56
28	112	4,290	492	606	728	2,930	1,440	319	696	520	145	63
29	97	5,850	664	548	728	1,790	2,330	300	932	465	142	64
30	112	5,450	1,790	492	-------	6,690	3,250	286	3,580	410	145	66
31	142	-------	1,920	492	-------	5,450	-------	286	-------	355	332	-------

NOTE—Discharge Jan. 17-22 estimated, because of ice, from weather records, study of gage height graph and discharge of Tionesta Creek at Nebraska, Clarion River near Piney and Mahoning Creek near Dayton.

Monthly discharge of Red Bank Creek at Saint Charles, for the year ending Sept. 30, 1928

(Drainage area 540 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	2,480	46	299	0.554	0.64
November	5,850	148	1,330	2.46	2.74
December	16,200	492	3,150	5.83	6.72
January	1,670	400	688	1.27	1.46
February	3,580	438	1,340	2.48	2.68
March	6,690	410	1,740	3.22	3.71
April	3,250	760	1,990	3.69	4.12
May	3,090	286	803	1.49	1.72
June	7,530	273	2,130	3.94	4.40
July	5,050	355	1,450	2.69	3.10
August	895	142	321	.594	.68
September	319	56	111	.206	.23
The Year	16,200	46	1,280	2.37	32.20

OHIO BASIN—STATION NO. 11

MAHONING CREEK NEAR DAYTON

Location.—At single-span steel highway bridge, known as Independence Bridge, about two miles northeast of Dayton, Armstrong County.

Drainage Area.—322 square miles.

Records Available.—August 12, 1916, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Le Vern Mathews.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control for low stages is at the first of a series of riffles about 50 feet downstream from the gage; practically permanent; for high stages a dam about one mile downstream.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 8.70 feet at 9 a. m. March 30 (discharge, 7,940 sec-

ond feet); minimum, 1.50 feet at 8 a. m. September 19 (discharge, 17 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 40 and 1,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extreme stages, when they are fair.

Discharge measurements of Mahoning Creek near Dayton during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
18	Aug. 23	S. A. Kowalchik	2.16	161

Measurement made by wading 1,300 feet downstream from gage.

Daily Mean Gage Height, in feet, of Mahoning Creek near Dayton, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.67	2.26	6.27	3.60	2.23	3.04	5.89	4.28	2.58	3.16	3.30	2.66
2	1.66	2.37	6.06	3.54	2.20	2.99	5.59	4.06	2.58	2.97	3.68	2.46
3	1.75	2.57	5.74	3.41	2.19	2.90	5.04	3.85	2.45	2.76	3.52	2.33
4	1.86	2.79	5.63	3.31	2.21	2.86	4.44	3.55	2.53	2.82	3.25	2.23
5	1.83	2.79	5.68	3.16	-------	2.86	3.86	3.29	3.73	4.42	2.98	2.10
6	1.79	2.76	5.66	3.09	-------	2.78	3.39	3.15	6.13	6.37	3.02	2.05
7	1.80	2.73	5.30	2.98	-------	2.66	3.34	3.02	6.57	5.92	2.84	2.01
8	1.81	2.67	5.08	2.93	-------	2.63	-------	2.92	4.47	4.72	2.62	1.96
9	1.76	2.52	4.79	2.84	-------	2.70	-------	2.85	4.60	3.77	2.47	1.91
10	1.73	2.39	4.39	2.88	3.19	2.86	-------	2.81	4.97	3.52	2.34	1.87
11	1.78	2.31	4.58	2.87	3.13	2.99	-------	2.74	4.40	3.02	2.75	1.79
12	2.20	2.39	5.93	2.83	3.06	3.34	3.60	2.81	4.05	2.77	2.78	1.74
13	2.50	2.41	8.16	2.77	2.98	3.72	3.79	2.77	3.78	2.80	2.55	1.69
14	2.65	2.49	8.11	2.74	3.52	3.95	4.03	2.71	3.61	3.14	2.38	1.67
15	2.60	2.36	7.54	2.68	4.55	3.87	4.13	2.67	3.50	3.14	2.25	1.63
16	-------	2.63	7.41	2.59	4.77	3.83	4.04	2.62	3.36	3.10	2.18	1.58
17	-------	3.22	7.10	2.52	4.41	3.78	3.86	2.60	3.24	2.99	2.35	1.55
18	-------	3.49	6.21	2.46	4.11	3.73	3.70	2.83	3.50	2.78	2.58	1.54
19	-------	3.15	6.00	2.40	3.99	3.75	3.48	-------	3.78	2.69	2.34	1.52
20	-------	2.99	5.94	2.37	3.84	3.67	3.27	-------	3.70	3.42	2.26	1.92
21	-------	2.89	5.74	2.37	3.72	3.56	3.20	-------	3.78	-------	2.25	2.08
22	3.42	2.81	5.51	2.33	3.62	3.40	3.52	-------	3.67	3.62	2.21	1.99
23	3.10	2.73	5.28	2.29	3.86	3.26	4.03	2.61	3.54	3.44	2.17	1.93
24	2.92	2.65	4.96	2.33	3.89	3.09	4.41	2.55	3.62	3.14	2.15	1.86
25	2.83	2.65	4.34	2.36	3.67	2.95	3.88	2.50	3.50	2.87	2.11	1.86
26	2.72	3.17	3.87	2.33	3.42	2.88	3.25	2.46	3.34	2.66	2.06	1.83
27	2.60	5.07	3.52	2.28	3.29	2.85	3.04	2.43	3.26	2.48	2.00	1.80
28	2.49	6.15	3.30	2.25	3.12	2.87	3.88	2.49	3.16	2.48	1.95	1.75
29	2.46	6.05	3.18	2.25	3.06	3.19	4.91	2.61	3.16	2.40	1.92	1.71
30	2.39	6.25	3.32	2.22	-------	6.29	4.78	2.77	3.36	2.80	1.96	1.69
31	2.30	-------	3.53	2.21	-------	6.54	-------	2.75	-------	2.93	2.80	-------

NOTE—Gage height Oct. 16-21, Feb. 5-9, Apr. 8-11, May 19-22 and July 21 unsatisfactory. Stage-discharge relation Nov. 30 to Dec. 30, Jan. 3-9, Feb. 19-22 and Mar. 1-7 affected by ice.

Daily discharge, in second-feet, of Mahoning Creek near Dayton, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	184	2,600	1,020	172	480	3,650	1,690	344	673	780	372
2	32	231	2,000	978	160	400	3,230	1,490	344	548	1,110	274
3	43	319	1,400	600	157	340	2,450	1,250	269	430	937	218
4	64	459	950	340	164	320	1,790	978	319	459	744	172
5	57	459	650	320	900	300	1,250	780	1,160	1,790	578	127
6	49	430	500	320	600	300	858	673	3,940	4,390	578	113
7	50	430	460	320	600	300	819	578	4,690	3,650	488	102
8	52	372	400	340	1,200	372	2,600	518	1,890	2,110	344	89
9	44	294	400	400	1,200	400	2,400	488	2,000	1,160	279	76
10	40	240	440	518	708	488	1,800	459	2,450	937	218	66
11	47	204	500	488	673	578	1,300	430	1,790	578	430	49
12	160	240	700	488	608	819	1,020	457	1,390	430	459	42
13	294	249	1,500	430	578	1,110	1,200	430	1,200	459	319	35
14	372	289	3,800	430	937	1,340	1,390	400	1,020	673	235	33
15	344	226	4,600	400	2,000	1,250	1,490	372	937	673	180	28
16	300	372	4,000	344	2,220	1,250	1,390	344	819	638	153	23
17	240	708	3,000	294	1,790	1,160	1,250	344	744	578	222	21
18	260	937	2,200	274	1,490	1,160	1,110	488	937	459	344	20
19	480	673	1,700	244	950	1,160	937	2,000	1,200	400	218	19
20	1,900	578	1,300	231	500	1,060	744	1,700	1,110	858	184	78
21	1,400	518	950	231	440	978	708	1,100	1,200	1,300	180	121
22	858	459	700	213	600	858	937	650	1,060	1,020	164	96
23	638	430	600	196	1,250	744	1,390	344	978	898	150	81
24	518	372	480	213	1,300	638	1,790	319	1,020	673	144	64
25	488	372	400	226	1,060	548	1,300	294	937	488	130	64
26	400	673	380	213	858	518	744	274	819	372	116	57
27	344	2,570	340	192	780	488	608	259	744	284	99	50
28	289	4,090	320	180	638	488	1,300	289	673	284	86	43
29	274	3,790	320	180	608	708	2,330	344	673	244	78	37
30	240	3,200	500	168	-------	4,240	2,220	430	819	459	89	35
31	200	-------	978	164	-------	4,540	-------	480	-------	548	459	-------

NOTE—Discharge estimated Oct. 16-21, Feb. 5-9, Apr. 8-11, May 19-22 and July 21, because of unsatisfactory gage height record, and Nov. 30 to Dec. 30, Jan. 3-9, Feb. 19-22 and Mar. 1-7, because of ice, from weather records, study of gage height graph and discharge of Red Bank Creek at Saint Charles, Crooked Creek at Hileman's Farm and Blacklick Creek at Blacklick.

Monthly discharge of Mahoning Creek near Dayton, for the year ending Sept. 30, 1928

(Drainage area 322 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,900	32	339	1.05	1.21
November	4,090	184	812	2.52	2.81
December	4,600	320	1,260	3.91	4.51
January	1,020	164	353	1.10	1.27
February	2,220	157	867	2.69	2.90
March	4,540	300	946	2.94	3.39
April	3,650	608	1,530	4.75	5.30
May	2,000	259	665	2.07	2.39
June	4,690	269	1,250	3.88	4.33
July	4,390	244	918	2.85	3.29
August	1,110	78	339	1.05	1.21
September	372	19	86.7	.269	.30
The Year	4,690	19	779	2.42	32.91

OHIO BASIN—STATION NO. 12

ALLEGHENY RIVER AT KITTANNING

Location.—At five-span steel highway bridge, Market Street, Kittanning, Armstrong County.

Drainage Area.—9,010 square miles.

Records Available.—August 18, 1904, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by John F. Patton. Elevation of gage zero 764.45 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel. Control is at a riffle about 500 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum open-water stage during the year, estimated from hydrograph, 22.00 feet at 11 p. m. December 1 (discharge, 152,000 second-feet); a stage of 23.96 feet was reached at 7 a. m. February 9, but the water was held back by an ice jam; minimum, 1.60 feet at 4 p. m. September 19 (discharge, 1,100 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 800 and 250,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Allegheny River at Kittanning during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
61	Aug. 23	S. A. Kowalchik	3.14	3,570

Daily Mean Gage Height, in feet, of Allegheny River at Kittanning for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.70	2.50	20.17	13.87	14.21	16.66	12.10	8.13	3.82	7.86	5.08	3.12
2	1.68	2.65	21.12	13.62	13.88	16.58	10.90	7.65	3.79	7.52	4.98	2.98
3	1.65	3.18	18.67	11.95	13.78	16.48	9.75	7.20	3.76	7.12	4.55	2.78
4	1.68	3.95	15.49	10.37	13.71	14.96	8.95	7.33	3.76	6.59	3.81	2.22
5	2.10	4.88	12.12	16.37	14.46	14.44	8.77	6.47	6.44	7.34	3.53	2.08
6	2.42	5.50	10.19	18.27	17.51	13.98	8.77	6.30	12.42	11.14	3.68	2.42
7	2.12	5.15	8.67	19.87	16.58	13.34	8.40	5.55	15.24	10.32	4.61	2.32
8	1.92	5.38	7.97	20.07	17.21	13.36	8.65	5.07	13.99	8.74	4.93	2.02
9	1.91	5.15	7.67	19.95	18.96	13.16	10.15	4.80	11.94	7.56	4.38	2.02
10	1.90	4.88	7.73	20.07	13.34	13.76	10.75	4.70	12.24	6.82	4.03	2.02
11	1.82	4.72	7.32	18.27	11.76	13.84	10.45	4.65	12.19	6.79	5.43	1.92
12	2.00	4.60	8.47	14.17	10.71	13.91	9.20	4.73	10.34	6.32	5.58	1.98
13	3.15	5.82	10.47	9.19	8.56	15.76	8.93	4.57	8.69	5.96	4.53	2.08
14	3.90	5.78	20.59	7.15	8.01	11.76	8.83	4.05	7.72	6.66	4.08	1.82
15	3.55	5.68	19.17	7.29	9.46	13.61	8.03	3.90	7.04	6.86	3.71	1.78
16	3.22	5.42	18.27	7.59	10.68	12.98	8.33	3.65	6.64	6.72	3.45	2.02
17	3.08	7.40	19.27	7.59	10.68	10.24	8.43	3.63	5.74	6.34	3.75	1.78
18	3.18	17.17	15.47	6.95	9.46	9.76	7.70	5.05	5.29	5.52	3.41	1.68
19	3.55	16.87	13.37	6.49	8.96	8.06	7.33	7.33	7.09	5.09	3.05	1.62
20	4.68	13.82	11.32	6.46	7.54	7.75	7.57	7.13	7.42	6.12	2.98	2.02
21	5.25	11.72	9.77	8.56	7.20	6.80	6.63	6.77	6.74	6.69	2.85	1.68
22	5.18	9.87	9.07	8.16	9.01	6.87	6.85	6.46	6.84	6.24	2.85	1.98
23	5.65	8.92	8.27	11.96	12.26	7.30	9.80	5.49	9.29	6.28	3.08	2.18
24	5.55	8.52	7.69	16.08	11.66	7.60	11.03	5.06	9.19	7.18	3.22	1.88
25	4.40	9.89	6.97	19.51	15.31	8.40	10.35	4.92	13.44	6.51	3.00	1.85
26	3.95	11.62	6.55	19.96	17.91	10.35	9.23	4.66	11.04	6.01	3.08	1.68
27	3.60	11.57	6.02	18.36	17.46	12.33	8.40	4.64	9.79	5.31	3.14	1.98
28	3.22	14.27	6.12	17.46	16.58	13.35	8.27	4.76	8.09	5.08	2.78	1.72
29	3.30	17.17	7.75	16.71	16.61	12.65	7.77	4.36	7.74	4.81	3.02	1.72
30	2.70	16.27	9.77	14.86	-------	13.30	7.90	4.36	7.46	4.31	2.78	1.65
31	2.48	-------	11.67	14.36	-------	14.25	-------	3.76	-------	4.85	2.92	-------

NOTE—Stage-discharge relation Jan. 5-13, Jan. 23 to Feb. 11 and Feb. 21 to Mar. 13 affected by ice.

Daily discharge, in second-feet, of Allegheny River at Kittanning, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,220	2,440	131,000	68,200	9,500	11,000	53,800	25,800	5,340	24,500	9,640	3,720
2	1,220	2,640	141,000	65,000	9,000	12,000	45,000	22,600	5,340	22,000	9,200	3,490
3	1,160	3,940	114,000	53,000	9,000	11,000	37,200	20,200	5,340	19,600	7,600	3,060
4	1,220	5,840	82,400	41,400	9,000	10,000	31,700	20,800	5,340	16,800	5,340	1,920
5	1,760	8,780	53,800	34,000	9,500	9,000	30,400	16,200	15,800	20,800	4,620	1,760
6	2,260	11,400	40,000	28,000	14,000	7,500	30,400	15,300	56,100	46,400	5,080	2,260
7	1,760	10,100	29,700	24,000	20,000	7,000	27,800	11,900	79,700	40,700	7,600	2,080
8	1,460	11,000	25,200	22,000	18,000	7,000	29,000	9,640	69,100	29,700	8,780	1,600
9	1,460	10,100	23,300	24,000	24,000	7,000	40,000	8,380	52,300	22,600	6,960	1,600
10	1,460	8,780	23,300	26,000	40,000	7,500	44,300	7,980	54,500	17,800	5,840	1,600
11	1,340	7,980	20,800	26,000	46,000	9,000	41,400	7,600	54,500	17,800	11,000	1,460
12	1,600	7,600	28,400	24,000	43,600	14,000	33,000	7,980	40,700	15,300	11,900	1,600
13	3,940	12,800	42,200	22,000	29,000	30,000	31,000	7,600	29,700	13,800	7,260	1,760
14	5,580	12,800	135,000	20,200	25,200	51,500	30,400	5,840	23,300	17,300	6,100	1,340
15	4,850	12,400	120,000	20,800	35,100	65,700	25,200	5,580	19,000	18,400	5,080	1,340
16	3,940	11,000	110,000	22,600	43,600	60,800	27,100	4,850	16,800	17,300	4,390	1,600
17	3,720	21,400	121,000	22,600	43,600	40,000	27,800	4,850	12,400	15,300	5,340	1,340
18	3,940	98,600	82,400	19,000	35,100	37,200	23,300	9,200	10,500	11,400	4,390	1,220
19	4,850	95,600	64,000	16,200	31,700	25,800	20,800	20,800	19,600	9,640	3,490	1,100
20	7,980	67,400	47,900	16,200	22,000	23,900	22,600	19,600	21,400	14,300	3,490	1,600
21	10,100	50,800	37,200	29,000	17,000	17,800	16,800	17,800	17,300	17,300	3,060	1,220
22	10,100	37,900	32,400	26,400	12,000	18,400	17,800	16,200	17,800	14,800	3,060	1,600
23	11,900	31,000	27,100	20,000	11,000	20,800	37,200	11,400	33,700	15,300	3,720	1,920
24	11,900	28,400	23,300	18,000	16,000	22,000	45,700	9,640	33,000	20,200	3,940	1,460
25	6,960	37,900	19,000	18,000	20,000	27,800	41,400	8,780	64,000	16,200	3,490	1,400
26	5,840	50,000	16,800	24,000	17,000	41,400	33,000	7,980	45,700	13,800	3,720	1,220
27	4,850	50,000	13,800	24,000	14,000	55,300	27,800	7,600	37,200	10,500	3,720	1,600
28	3,940	71,700	14,300	20,000	11,000	64,000	27,100	8,380	25,800	9,640	3,060	1,220
29	4,160	98,600	23,900	17,000	11,000	57,600	23,900	6,960	23,300	8,380	3,490	1,220
30	2,850	89,800	37,200	14,000	-------	63,200	24,500	6,960	22,000	6,660	3,060	1,160
31	2,440	-------	50,800	11,000	-------	70,800	-------	5,340	-------	8,380	3,270	-------

NOTE—Discharge Jan. 5-13, Jan. 23 to Feb. 11 and Feb. 21 to Mar. 13 estimated, because of ice, from weather records, study of gage height graph, discharge of Allegheny River at Franklin and comparison with similar studies for Allegheny River at Red House and French Creek at Saegertown.

Monthly discharge of Allegheny Creek at Kittanning, for the year ending Sept. 30, 1928

(Drainage area 9,010 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	11,900	1,160	4,250	0.472	0.54
November	98,600	2,440	32,300	3.58	3.99
December	141,000	13,800	55,800	6.19	7.14
January	68,200	11,000	26,400	2.93	3.38
February	46,000	9,000	22,300	2.48	2.68
March	70,800	7,000	29,200	3.24	3.74
April	53,800	16,800	31,600	3.51	3.92
May	25,800	4,850	11,600	1.29	1.49
June	79,700	5,340	30,600	3.40	3.79
July	46,400	6,660	17,800	1.98	2.28
August	11,900	3,060	5,510	.612	.71
September	3,720	1,100	1,720	.191	.21
The Year	141,000	1,100	22,400	2.49	33.87

OHIO BASIN—STATION NO. 13

CROOKED CREEK AT HILEMAN'S FARM

Location.—At single-span steel highway bridge, about three and one-half miles south of Ford City, at Hileman's Farm, Armstrong County.

Drainage Area.—279 square miles.

Records Available.—October 16, 1909, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by Ola M. Beck.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Left bank is high and not subject to overflow; right is low and becomes inundated at a stage of about 8 feet. Bed is composed of gravel and rock. Control is at a riffle about 300 feet downstream from the gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, 10.10 feet observed at 4.30 p. m. March 30 (discharge, about 9,600 second-feet); minimum, 0.76 foot at 5.15 p. m. September 27 (discharge, 14 second-feet.)

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,200 second-feet and fairly well defined above that limit. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Crooked Creek at Hileman's Farm during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
37	Aug. 22	S. A. Kowalchik	1.70	126

Measurement made by wading 800 feet downstream from gage.

Daily Mean Gage Height, in feet, of Crooked Creek at Hileman's Farm, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.93	1.50	4.45	2.65	2.14	2.46	4.10	5.35	1.67	2.90	3.10	1.31
2	.87	1.39	3.75	2.55	2.06	2.34	3.60	3.75	1.57	3.15	3.60	1.27
3	.80	2.45	3.42	3.12	1.99	2.18	3.31	3.05	1.57	2.77	3.12	1.14
4	1.53	4.10	3.03	3.18	2.37	2.65	3.30	2.85	2.35	2.85	3.15	1.10
5	1.47	3.89	2.82	2.92	4.60	2.20	3.19	2.59	5.70	4.90	2.76	1.16
6	1.22	3.80	2.70	2.97	4.40	1.82	2.95	3.08	8.55	5.20	3.02	1.04
7	1.09	3.19	2.69	2.80	3.40	1.74	3.00	2.26	6.40	4.30	2.65	1.02
8	1.11	3.02	2.60	2.92	3.90	1.88	5.37	2.20	4.30	3.36	2.39	1.03
9	1.29	2.78	2.40	3.09	5.20	2.04	4.45	2.06	4.65	3.50	2.30	.98
10	1.27	2.55	2.20	2.78	4.45	2.87	3.40	1.96	7.11	3.31	2.13	.87
11	1.16	2.44	2.42	2.76	3.68	2.80	3.15	1.92	5.02	2.85	2.90	.92
12	1.24	2.28	3.50	2.74	3.22	2.78	3.60	2.04	3.72	2.80	2.90	.90
13	1.51	2.19	5.75	2.67	2.90	2.78	3.61	1.88	3.07	4.27	2.43	1.00
14	2.08	2.04	8.75	2.48	3.15	3.14	3.62	1.71	2.78	5.15	2.10	.93
15	2.03	1.96	5.75	2.34	5.60	2.98	3.66	1.59	2.61	3.80	1.78	.87
16	1.76	1.95	6.45	2.25	5.10	2.88	3.13	1.80	2.32	3.11	3.20	.85
17	1.64	2.86	5.85	2.20	4.28	2.78	2.94	1.90	2.00	2.75	2.69	.86
18	1.80	4.05	4.25	2.14	3.68	2.78	2.72	1.80	3.10	2.46	2.35	.89
19	4.95	3.25	3.64	2.18	3.22	2.69	2.61	2.88	3.30	2.40	2.10	.89
20	7.25	2.80	3.30	2.92	2.90	2.58	2.35	3.98	2.65	8.15	1.89	1.24
21	6.05	2.41	3.12	2.66	2.55	2.72	2.90	3.17	2.24	6.60	1.75	1.39
22	4.55	2.32	2.79	3.05	2.52	3.24	3.55	2.80	3.60	4.80	2.80	1.17
23	3.00	2.37	2.59	3.16	3.02	3.68	3.70	2.36	3.36	4.90	2.70	1.06
24	2.78	2.35	2.54	3.00	5.15	3.54	3.68	2.16	3.06	4.20	2.30	.94
25	2.49	2.26	2.44	3.23	4.80	3.37	3.66	1.98	4.00	3.27	1.53	.89
26	2.22	2.29	2.24	3.01	3.35	3.64	3.40	1.97	3.50	2.89	1.39	.86
27	2.07	2.60	2.10	2.61	2.75	3.45	3.54	1.92	3.02	2.00	1.32	.79
28	1.95	5.65	2.07	2.50	2.72	3.08	3.75	1.90	2.71	2.30	1.34	.82
29	1.97	6.10	2.18	2.15	2.60	3.60	4.64	1.77	2.80	3.55	1.21	.87
30	1.88	5.15	2.88	2.13	-------	8.40	6.30	1.76	3.01	2.55	1.25	.81
31	1.68	-------	2.89	2.09	-------	6.50	-------	1.78	-------	2.01	1.47	-------

NOTE—Stage-discharge relation Jan. 3-9, 22, 23 and Jan. 28 to Feb. 2 affected by ice.

Daily discharge, in second-feet, of Crooked Creek at Hileman's Farm, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	81	1,580	378	160	304	1,310	2,600	106	493	600	59
2	21	68	1,070	338	160	262	915	1,070	91	629	915	50
3	16	300	780	280	165	213	718	572	91	422	600	43
4	85	1,310	572	240	272	378	718	469	266	469	629	39
5	77	1,150	445	220	1,760	218	658	357	2,960	2,060	422	44
6	50	1,070	400	220	1,580	131	519	600	7,180	2,380	545	34
7	38	658	400	240	780	117	545	237	3,860	1,490	378	33
8	40	545	357	280	1,150	142	2,600	218	1,490	749	279	33
9	57	445	282	360	2,380	177	1,580	181	1,760	845	249	29
10	55	338	218	445	1,580	469	780	159	4,880	718	199	21
11	44	296	289	422	990	445	629	150	2,160	469	493	25
12	52	243	845	422	658	445	915	177	990	445	493	23
13	82	215	3,080	378	493	445	915	142	572	1,490	293	31
14	186	177	7,500	311	629	629	915	112	445	2,380	191	25
15	174	159	3,080	262	2,840	545	990	94	357	1,070	124	21
16	120	156	3,860	234	2,270	493	629	127	256	600	658	20
17	101	469	3,080	218	1,490	445	519	146	167	422	400	20
18	127	1,230	1,400	202	990	445	400	127	600	304	266	22
19	2,160	688	915	213	658	400	357	493	718	282	191	22
20	5,030	445	718	493	493	357	266	1,230	378	6,560	144	52
21	3,330	286	600	378	338	400	493	629	230	4,140	118	68
22	1,760	256	445	300	318	688	915	445	915	1,960	445	45
23	545	272	357	320	545	990	990	269	749	2,060	400	36
24	445	266	338	545	2,380	845	990	207	572	1,400	249	26
25	314	237	296	688	1,960	749	990	163	1,230	688	85	22
26	224	246	230	545	749	915	780	161	845	493	68	20
27	184	357	191	357	422	812	845	150	545	167	60	16
28	156	2,840	184	240	400	600	1,070	146	400	249	62	17
29	161	3,460	213	190	357	915	1,760	122	445	915	49	21
30	142	2,380	493	170	-------	6,880	3,730	120	545	338	53	17
31	107	-------	493	160	-------	4,000	-------	124	-------	169	77	-------

NOTE—Discharge Jan. 3-9, 22, 23 and Jan. 28 to Feb. 2 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Blacklick Creek at Blacklick, Loyalhanna Creek at New Alexandria and West Branch Susquehanna River at Bower.

Monthly discharge of Crooked Creek at Hileman's Farm, for the year ending Sept. 30, 1928

(Drainage area 279 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	5,030	16	513	1.84	2.12
November	3,460	68	688	2.47	2.76
December	7,500	184	1,120	4.01	4.62
January	688	160	324	1.16	1.34
February	2,840	160	999	3.58	3.86
March	6,880	117	802	2.87	3.31
April	3,730	266	981	3.52	3.93
May	2,600	94	381	1.37	1.58
June	7,180	91	1,190	4.27	4.76
July	6,560	167	1,190	4.27	4.92
August	915	49	314	1.13	1.30
September	68	16	31.3	.112	.12
The Year	7,500	16	710	2.54	34.62

OHIO BASIN—STATION NO. 14

STONY CREEK AT JOHNSTOWN

Location.—At single-span steel highway bridge, Poplar Street, Johnstown, Cambria County, about one and one-half miles upstream from the confluence of Stony Creek and Little Conemaugh River.

Drainage Area.—468 square miles.

Records Available.—July 2, 1913, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Edmund F. Miller. Elevation of gage zero 1,154.0 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Control for low water is at a riffle, where the bed is composed of gravel and small boulders, about 100 feet downstream from the gage; practically permanent. Control for high stages is at a riffle, where the bed is composed of gravel and large boulders, about 1,300 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 13.23 feet at 1 a. m. May 1 (discharge, about 16,000 second-feet); minimum 1.00 foot at 7:15 a. m. September 29 (discharge 30 second-feet).

Ice.—Stage-discharge relation usually affected by ice for short periods.

Diversions.—A dam one mile upstream from the mouth of Quemahoning Creek, a tributary of Stony Creek, creates a reservoir having a capacity of 1,740,000,000 cubic feet, from which water is carried through a conduit to the Cambria Plant of the Bethlehem Steel Company at Johnstown, and discharged into Stony Creek below the gaging station.

Accuracy.—Stage-discharge relation changed during high flow of October 20, 1927. Two rating tables used; one applicable to October

20, fairly well defined; the other applicable since that date, well defined between 80 and 800 second-feet and fairly well defined above and below those limits. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Cooperation.—A record of the quantity of water diverted from the Quemahoning Reservoir is furnished by the Bethlehem Steel Company, Johnstown, Pennsylvania.

Discharge measurements of Stony Creek at Johnstown during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
53	Aug. 21	S. A. Kowalchik	1.25	72.2

Measurement made by wading 1,000 feet upstream from gage.

Daily Mean Gage Height, in feet, of Stony Creek at Johnstown, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.15	1.97	3.68	3.43	2.33	2.90	5.25	11.08	1.80	3.39	1.82	1.28
2	1.41	3.93	3.33	2.88	2.20	2.83	4.85	7.53	1.86	3.05	2.18	1.16
3	1.67	6.48	3.12	2.42	2.22	2.74	4.63	6.03	1.90	2.67	1.85	1.12
4	1.79	5.98	2.92	2.39	2.30	2.70	4.46	5.25	2.60	2.63	1.67	1.16
5	1.57	5.10	2.79	2.29	4.50	2.72	4.12	4.40	3.58	2.83	1.53	1.10
6	1.34	4.39	2.65	2.33	4.34	2.76	3.82	3.74	3.12	3.09	1.52	1.13
7	1.23	3.57	2.70	2.43	3.82	2.72	6.35	3.34	2.87	2.55	1.52	1.12
8	1.19	3.38	4.05	2.42	4.04	2.77	7.85	2.28	2.73	2.29	1.44	1.12
9	1.20	3.09	4.47	2.43	4.02	2.84	5.55	2.64	2.66	2.15	1.48	1.13
10	1.20	3.23	3.44	2.45	3.86	3.27	4.51	2.78	2.95	2.63	1.40	1.10
11	1.20	3.78	3.96	2.40	3.63	3.43	4.42	2.69	2.63	2.32	1.64	1.08
12	1.57	3.84	6.55	2.36	3.30	4.00	5.25	2.68	2.41	3.52	1.48	1.05
13	2.85	3.53	6.65	2.32	2.98	5.07	5.87	2.53	2.29	3.66	1.39	1.10
14	2.20	3.19	7.55	2.30	3.59	5.97	4.86	2.36	2.25	6.06	1.32	1.11
15	1.84	2.96	6.19	2.24	5.69	5.53	4.75	2.25	2.17	4.26	1.30	1.07
16	1.76	2.87	5.46	2.14	4.83	4.69	4.28	2.16	2.02	3.33	1.27	1.08
17	1.95	2.81	4.76	2.18	4.17	4.11	4.14	2.15	1.93	2.85	1.28	1.08
18	6.40	3.16	4.25	2.26	3.91	3.89	3.78	2.14	2.15	2.52	1.33	1.08
19	9.80	2.93	3.78	2.41	3.41	3.54	3.44	2.19	3.53	2.30	1.47	1.10
20	12.30	2.65	3.52	2.48	3.13	3.35	3.02	2.28	3.73	2.26	1.39	1.46
21	8.34	2.45	2.64	2.54	2.93	3.36	3.12	2.45	3.58	2.16	1.27	1.66
22	6.00	2.21	2.44	3.17	2.86	3.81	4.10	2.21	4.88	2.02	1.34	1.38
23	4.74	2.20	2.58	2.97	2.99	5.61	4.27	2.10	3.83	3.13	1.32	1.23
24	3.59	2.33	2.68	2.66	4.45	6.12	5.03	1.97	4.03	2.87	1.28	1.14
25	3.23	2.32	2.36	3.81	4.43	6.25	5.02	1.92	3.86	2.27	1.28	1.10
26	3.17	2.36	2.38	3.51	3.48	5.86	4.50	1.89	3.38	1.99	1.45	1.08
27	3.17	2.54	2.37	3.07	3.06	5.33	4.29	1.86	3.08	1.88	1.30	1.06
28	3.25	5.61	2.37	2.87	2.89	4.60	4.38	1.86	3.00	1.88	1.24	1.04
29	2.85	5.54	2.42	2.35	2.91	4.66	5.43	1.83	3.18	1.84	1.18	1.01
30	2.13	4.44	2.73	2.33	-------	6.96	9.85	1.84	3.33	1.75	1.13	1.13
31	2.08	-------	3.01	2.31	-------	6.75	-------	1.87	-------	1.59	1.22	-------

Daily discharge, in second-feet, of Stony Creek at Johnstown, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	294	1,280	1,070	460	755	2,510	11,900	232	1,070	239	84
2	168	1,420	1,000	485	390	728	2,140	5,340	253	815	590	58
3	181	3,980	875	485	390	672	1,980	3,370	267	618	250	50
4	222	3,370	755	485	435	645	1,900	2,510	590	618	191	58
5	151	2,420	700	435	1,900	645	1,580	1,820	1,210	728	148	46
6	93	1,820	618	460	1,740	672	1,350	1,280	875	875	145	52
7	72	1,210	645	510	1,350	945	3,850	1,000	728	562	145	50
8	66	1,070	1,500	485	1,500	672	5,760	435	672	435	123	50
9	67	875	1,900	510	1,500	728	2,920	618	618	368	134	52
10	67	940	1,070	510	1,420	1,000	1,900	700	785	618	112	46
11	67	1,350	1,500	485	1,210	1,070	1,820	645	618	435	181	43
12	151	1,350	4,100	460	1,000	1,500	2,510	645	485	1,140	134	38
13	728	1,140	4,100	435	815	2,420	2,710	562	435	1,280	110	46
14	390	940	5,480	435	1,210	3,370	2,230	460	412	3,480	93	48
15	241	785	3,600	412	3,030	2,820	2,140	412	368	1,740	88	41
16	211	728	2,820	368	2,140	2,060	1,740	368	305	1,000	81	43
17	285	700	2,140	390	1,660	1,580	1,580	368	278	728	84	43
18	3,850	940	1,660	412	1,420	1,420	1,350	368	368	535	95	43
19	9,200	785	1,350	485	1,070	1,140	1,070	390	1,140	435	131	46
20	14,800	618	1,140	535	875	1,070	815	435	1,280	412	110	128
21	6,540	510	618	562	785	1,070	875	510	1,210	368	81	188
22	3,370	390	510	940	755	1,350	1,580	390	2,230	305	98	107
23	2,060	390	590	785	815	2,920	1,740	345	1,350	875	93	73
24	1,210	460	645	645	1,820	3,480	2,320	294	1,500	728	84	54
25	940	435	460	1,350	1,820	3,600	2,320	275	1,420	412	84	46
26	940	460	485	1,140	1,140	3,260	1,900	264	1,070	301	126	43
27	940	962	460	875	875	2,610	1,740	253	875	260	88	40
28	940	2,920	460	728	755	1,980	1,820	253	815	260	75	36
29	728	2,820	485	460	755	2,060	2,710	242	940	246	62	32
30	368	1,820	672	460	-------	4,640	9,200	246	1,000	216	52	52
31	345	-------	815	435	-------	4,360	-------	256	-------	166	70	-------

NOTE—Discharge does not include the water diverted from Quemahoning Reservoir.

Monthly discharge of Stony Creek at Johnstown, for the year ending Sept. 30, 1928

(Drainage area 468 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	14,800	60	1,590	3.65	4.21
November	3,980	294	1,250	2.93	3.27
December	5,480	460	1,430	3.33	3.84
January	1,350	368	588	1.53	1.76
February	3,030	390	1,210	2.86	3.08
March	4,640	645	1,840	4.19	4.83
April	9,200	815	2,340	5.26	5.87
May	11,900	237	1,190	2.82	3.25
June	2,230	225	811	2.00	2.23
July	3,480	157	711	1.80	2.08
August	390	52	126	.551	.64
September	188	32	57.9	.359	.46
The Year	14,800	41	1,090	2.61	35.46

NOTE—Discharge does not include the water diverted from the Quemahoning Reservoir. Run-off includes the quantity of water diverted.

OHIO BASIN—STATION NO. 15

BLACKLICK CREEK AT BLACKLICK

Location.—At three-span steel highway bridge on road to Gratton, about one-quarter of a mile north of the Pennsylvania Railroad Station, Blacklick, Indiana County.

Drainage Area.—386 square miles.

Records Available.—August 16, 1904, to December 31, 1905, and January 8, 1907, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by Carrie Kelly.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to inundation; left begins to overflow at a stage of about 12.0 feet. Bed is composed of sand, gravel and boulders. Control is at a riffle about 200 feet downstream from the gage; may shift occasionally.

Extremes of Discharge.—Maximum stage during the year, 9.80 feet observed at 7 a. m. October 20 (discharge, 11,700 second-feet); minimum, 2.18 feet at 6 p. m. September 12, from 6 p. m. September 13 to 6 p. m. September 14 and at 6 p. m. September 28 (discharge 39 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 10,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Blacklick Creek at Blacklick during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
47	Aug. 20	S. A. Kowalchik	2.47	119

Measurement made by wading 2,000 feet upstream from gage.

Daily Mean Gage Height, in feet, of Blacklick Creek at Blacklick for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.34	2.80	4.75	3.90	5.15	3.65	4.90	6.20	2.61	4.15	4.05	2.28
2	2.33	2.78	4.35	3.15	5.25	3.40	4.55	5.00	2.66	3.80	3.95	2.29
3	2.35	4.40	4.05	3.60	5.30	3.26	4.30	4.45	2.58	3.65	3.60	2.26
4	3.90	5.05	3.85	3.65	4.15	3.10	4.80	4.10	3.95	3.55	3.40	2.30
5	3.06	4.85	3.60	5.10	6.88	3.10	4.35	3.80	5.20	4.80	3.20	2.24
6	2.78	4.60	3.50	5.25	5.05	3.15	4.05	3.60	5.95	4.45	3.19	2.22
7	2.62	4.25	3.60	4.90	4.40	3.07	3.95	3.40	4.90	3.85	2.96	2.25
8	2.71	3.90	4.70	3.80	4.95	3.08	5.60	3.22	4.50	3.45	2.92	2.25
9	2.71	3.85	3.75	3.80	5.45	3.50	4.95	3.14	4.85	3.30	2.75	2.25
10	2.54	3.65	3.80	3.55	4.90	3.95	4.40	3.04	5.40	3.80	2.72	2.24
11	2.51	3.80	3.95	3.50	4.35	3.80	4.30	3.11	4.80	3.55	3.01	2.22
12	2.65	3.85	6.42	3.40	4.00	4.20	5.50	3.16	4.20	4.45	2.80	2.19
13	4.35	3.60	6.40	3.31	3.65	4.65	5.10	3.16	3.85	5.25	2.65	2.19
14	3.65	3.50	7.60	3.22	4.10	5.35	4.90	3.02	3.60	6.17	2.58	2.18
15	3.31	3.40	5.70	3.14	6.77	4.70	4.60	2.75	3.45	4.65	2.54	2.22
16	3.10	3.35	5.80	3.07	5.60	4.00	4.20	2.76	3.17	4.15	3.10	2.36
17	3.00	3.36	5.15	3.40	4.80	3.95	3.95	2.74	3.07	3.70	2.65	2.36
18	4.55	4.05	4.60	3.20	4.65	3.80	3.70	2.77	3.30	3.95	2.63	2.30
19	7.95	3.65	4.15	3.02	3.80	3.75	3.60	2.90	5.72	3.40	2.59	2.30
20	9.11	3.40	4.20	4.44	3.90	3.60	3.55	3.26	4.20	5.27	2.48	2.32
21	6.30	3.41	3.90	3.15	3.45	3.75	3.35	2.97	4.30	4.40	2.34	2.33
22	5.05	3.40	3.55	3.50	3.40	4.15	4.70	2.85	4.75	4.80	2.38	2.34
23	4.35	3.25	3.50	3.50	4.35	4.75	5.25	2.74	4.50	5.40	2.34	2.47
24	4.00	3.31	3.40	3.40	5.75	4.90	5.40	2.65	4.90	4.40	2.30	2.27
25	3.65	3.50	3.00	4.20	4.60	4.80	5.05	2.62	4.70	3.85	2.53	2.20
26	3.45	3.32	3.03	3.75	4.00	4.70	4.50	2.65	4.20	3.55	2.48	2.21
27	3.29	3.90	3.05	3.50	3.85	4.50	4.20	2.68	4.00	3.35	2.39	2.20
28	3.17	6.14	2.95	3.36	3.70	4.15	4.80	2.80	3.60	3.40	2.40	2.20
29	3.00	6.05	3.30	3.70	3.55	4.05	6.00	2.79	4.20	3.11	2.33	2.25
30	2.99	5.40	4.00	5.11	-------	7.72	7.10	2.90	4.40	2.96	2.32	2.28
31	2.90	-------	4.10	5.10	-------	6.10	-------	2.78	-------	2.79	2.33	-------

NOTE—Stage-discharge relation Dec. 26-29, Jan. 3-9 and Jan. 29 to Feb. 3 affected by ice.

Daily discharge, in second-feet, of Blacklick Creek at Blacklick, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	245	1,730	910	400	400	1,840	3,880	164	1,160	990	59
2	71	236	1,330	418	420	420	1,520	1,960	184	835	950	61
3	77	1,330	990	360	480	480	1,240	1,330	153	725	690	55
4	910	1,960	872	340	1,160	390	1,730	1,070	950	658	560	63
5	365	1,730	690	340	5,270	390	1,330	835	2,230	1,730	445	50
6	236	1,520	625	340	1,960	418	990	690	3,510	1,330	445	46
7	168	1,160	690	360	1,330	365	950	560	1,840	872	320	52
8	204	910	1,620	420	1,960	390	2,840	445	1,420	592	300	52
9	204	872	798	500	2,520	625	1,960	418	1,730	500	222	52
10	139	725	835	658	1,840	950	1,330	365	2,520	835	209	50
11	128	835	950	625	1,330	835	1,240	390	1,730	658	340	46
12	180	872	4,260	560	990	1,160	2,680	418	1,160	1,330	245	40
13	1,330	690	4,260	500	725	1,520	2,090	418	872	2,230	180	40
14	725	625	6,740	445	1,070	2,520	1,840	340	690	3,880	158	39
15	500	560	3,000	418	5,060	1,620	1,520	222	592	1,520	139	46
16	390	530	3,160	365	2,840	990	1,160	227	418	1,160	390	79
17	340	530	2,230	560	1,730	950	950	218	365	760	180	79
18	1,520	990	1,520	445	1,520	835	760	232	500	950	172	63
19	7,580	725	1,160	340	835	798	690	290	3,000	560	156	63
20	9,990	560	1,160	1,330	910	690	658	472	1,160	2,380	118	68
21	4,060	560	910	418	592	798	530	325	1,240	1,330	74	71
22	1,960	560	658	625	560	1,160	1,620	268	1,730	1,730	85	74
23	1,330	472	625	625	1,330	1,730	2,230	218	1,420	2,520	74	114
24	990	500	560	560	3,160	1,840	2,520	180	1,840	1,330	63	57
25	725	625	340	1,160	1,520	1,730	1,960	168	1,620	872	136	42
26	592	500	320	798	990	1,620	1,420	180	1,160	658	118	44
27	500	910	300	625	872	1,420	1,160	192	990	530	87	42
28	418	3,690	300	530	760	1,160	1,730	245	690	560	90	42
29	340	3,510	340	480	658	990	3,510	240	1,160	390	71	52
30	335	2,520	990	420	-------	6,950	5,690	290	1,330	320	68	59
31	290	-------	1,070	400	-------	3,690	-------	236	-------	240	71	-------

NOTE—Discharge Dec. 26-29, Jan. 3-9 and Jan. 29 to Feb. 3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Stony Creek at Johnstown and Laurel Hill Creek at Ursina.

Monthly discharge of Blacklick Creek at Blacklick, for the year ending Sept. 30, 1928

(Drainage area 386 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	9,990	71	1,180	3.06	3.53
November	3,690	236	1,050	2.72	3.04
December	6,740	300	1,450	3.76	4.34
January	1,330	340	544	1.41	1.63
February	5,270	400	1,540	3.99	4.30
March	6,950	365	1,280	3.32	3.83
April	5,690	530	1,720	4.46	4.98
May	3,880	168	559	1.45	1.67
June	3,510	153	1,280	3.32	3.70
July	3,880	240	1,130	2.93	3.38
August	990	63	263	.681	.79
September	114	39	56.7	.147	.16
The Year	9,990	39	1,000	2.59	35.35

OHIO BASIN—STATION NO. 16

LOYALHANNA CREEK AT NEW ALEXANDRIA

Location.—At three-span concrete highway bridge, built on site of the old single-span covered wooden highway bridge, New Alexandria, Westmoreland County.

Drainage Area.—264 square miles.

Records Available.—August 17, 1913, to August 31, 1918; August 7, 1919, to July 16, 1923, and November 20, 1925, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by E. E. Huffman. Elevation of gage zero 917.26 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and do not overflow. Bed is composed of gravel and boulders. Control for low stages is at a gravel riffle about 50 feet downstream from gage; practically permanent. Medium and high stage control is at a riffle about 1,300 feet downstream from gage, composed of gravel and boulders; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 12.65 feet at noon October 20 (discharge, about 10,400 second-feet); minimum, 1.46 feet at 6 p. m. October 3 (discharge, 2.4 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined from 10 to 1,000 second-feet and fairly well defined above and below those limits. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Loyalhanna Creek at New Alexandria during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
26	Aug. 20	S. A. Kowalchik	2.01	86.3

Measurement made by wading 20 feet downstream from gage.

Daily Mean Gage Height, in feet, of Loyalhanna Creek at New Alexandria, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	2.30	3.90	3.15	2.62	3.03	4.72	8.06	2.37	3.41	2.40	2.00
2	1.51	2.19	3.72	2.90	2.61	3.02	4.69	5.01	2.33	3.88	2.23	1.84
3	1.48	4.20	3.54	2.92	2.50	2.86	4.45	4.01	2.42	3.27	2.00	1.95
4	2.45	4.10	3.40	2.79	2.61	2.48	4.15	3.64	2.82	3.56	1.87	1.93
5	2.24	4.48	3.24	2.60	4.92	2.62	3.73	3.34	2.72	4.51	2.80	1.72
6	2.01	4.92	2.99	2.66	4.32	2.71	3.51	3.14	3.34	4.11	2.69	1.88
7	1.96	5.60	3.17	2.77	3.55	2.66	3.31	2.98	3.64	3.46	2.22	1.82
8	1.95	4.98	3.38	2.82	3.82	2.69	4.02	2.83	3.66	3.16	2.33	1.81
9	1.94	3.89	3.14	2.97	5.05	3.35	3.75	2.79	3.81	3.21	2.20	1.82
10	1.92	2.87	2.76	2.93	4.79	3.87	3.42	2.65	3.71	3.46	2.05	1.87
11	1.88	2.79	3.10	2.92	3.65	3.90	3.31	2.61	3.48	3.27	1.88	1.74
12	2.34	2.72	7.10	2.81	3.42	3.79	4.42	2.63	3.13	2.95	1.71	1.69
13	3.15	2.67	7.00	2.76	3.52	3.69	4.15	2.54	2.81	3.65	1.77	1.78
14	2.53	2.61	7.60	2.78	4.85	4.02	4.25	2.41	2.78	5.10	1.83	1.91
15	2.47	2.58	5.68	2.69	5.42	3.71	4.05	2.35	2.74	4.55	1.97	1.85
16	2.17	2.49	4.62	2.69	5.15	4.11	3.48	2.29	2.65	3.87	2.70	2.10
17	2.11	2.85	4.20	2.67	5.12	4.36	3.33	2.33	2.53	3.06	2.70	1.94
18	3.80	3.28	3.79	2.63	4.89	4.03	3.17	2.35	2.44	2.81	2.06	1.84
19	9.45	3.51	3.37	2.70	4.55	3.41	3.04	2.39	2.90	2.76	2.01	1.80
20	11.90	3.61	3.34	2.74	3.67	3.04	2.91	------	2.86	2.80	1.96	1.92
21	8.15	3.92	3.22	2.80	2.78	3.02	2.79	------	4.16	2.73	1.92	1.85
22	4.70	3.35	2.97	2.81	2.69	2.95	3.36	------	6.41	2.85	1.98	1.68
23	3.72	2.83	2.85	2.83	3.82	3.17	4.78	------	5.51	2.89	1.90	1.69
24	3.10	2.87	2.79	2.77	7.02	3.92	4.94	------	5.86	2.79	1.79	1.80
25	2.82	2.83	2.65	2.72	4.47	3.95	4.84	------	4.51	2.59	1.76	1.84
26	2.73	2.90	2.60	2.73	3.59	3.81	3.86	------	3.91	2.41	1.72	1.88
27	2.64	4.50	2.49	2.71	3.28	4.19	3.61	2.57	3.31	2.34	1.87	1.84
28	2.57	7.75	2.52	2.74	3.14	3.80	3.78	2.74	3.05	2.40	1.84	1.86
29	2.52	6.85	2.73	2.71	3.03	3.32	7.06	2.40	3.34	2.35	1.58	1.82
30	2.44	4.50	3.28	2.62	------	7.97	4.96	2.43	3.96	2.32	1.70	1.94
31	2.37	------	3.32	2.62	------	6.37	------	2.45	------	2.29	1.97	------

NOTE—Gage height Oct. 1 and May 20-26 not observed. Stage-discharge relation Jan. 3, 4 and Jan. 26 to Feb. 2 affected by ice.

Daily discharge, in second-feet, of Loyalhanna Creek at New Alexandria, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.0	140	940	495	190	445	1,550	4,830	131	630	170	58
2	3.3	107	810	370	190	420	1,530	1,770	149	940	119	29
3	2.7	1,150	690	280	205	345	1,290	1,010	177	545	58	48
4	188	1,080	630	240	240	198	1,150	750	320	750	34	44
5	122	1,370	545	240	1,690	240	810	600	280	1,370	320	14
6	60	1,690	420	260	1,220	280	690	495	600	1,080	280	35
7	50	2,290	495	300	750	260	570	420	750	660	116	26
8	48	1,770	630	320	870	280	1,010	345	810	495	149	24
9	46	940	495	395	1,770	600	870	320	870	520	110	26
10	42	345	300	395	1,610	940	630	260	810	660	70	34
11	35	320	470	370	750	940	570	240	690	545	35	16
12	152	280	3,740	320	630	870	1,290	260	495	395	13	11
13	495	260	3,640	300	690	810	1,150	222	320	750	20	21
14	222	240	4,280	320	1,610	1,010	1,150	174	320	1,860	28	40
15	194	240	2,380	280	2,120	810	1,010	155	300	1,450	52	35
16	102	202	1,450	280	1,940	1,080	690	137	260	940	280	82
17	85	345	1,150	260	1,860	1,290	600	149	222	445	280	46
18	870	570	870	260	1,690	1,010	495	155	184	320	72	29
19	6380	690	600	280	1,450	630	445	167	370	300	60	23
20	9500	750	600	300	810	445	370	280	345	320	50	42
21	4940	940	520	320	320	420	320	420	1,150	300	42	30
22	1530	600	395	326	280	395	600	480	3,040	345	54	11
23	810	345	345	345	870	495	1,610	380	2,200	370	38	11
24	470	345	320	300	3,640	940	1,690	320	2,570	320	22	23
25	320	345	260	280	1,370	1,010	1,610	280	1,370	240	19	29
26	300	370	240	280	750	870	940	240	940	174	14	35
27	260	1,370	202	260	570	1,150	750	222	570	152	34	29
28	222	4,500	205	240	495	870	870	300	445	170	29	32
29	205	3,430	300	220	445	570	3,740	170	600	155	5.4	26
30	184	1,370	570	220	-------	4,720	1,770	180	1,010	146	12	46
31	161	-------	570	200	-------	3,040	-------	188	-------	137	52	-------

NOTE—Discharge estimated Oct. 1 and May 20-26, because of no gage height record, from weather records and study of gage height graph, and Jan. 3, 4 and Jan. 26 to Feb. 2, because of ice, from weather records, study of gage height graph and comparison with similar studies for Stony Creek at Johnstown and Blacklick Creek at Blacklick.

Monthly discharge of Loyalhanna Creek at New Alexandria, for the year ending Sept. 30, 1928

(Drainage area 264 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	9,500	2.7	903	3.42	3.94
November	4,500	107	946	3.58	3.99
December	4,280	202	937	3.55	4.09
January	495	200	298	1.13	1.30
February	3,640	190	1,070	4.05	4.37
March	4,720	198	883	3.34	3.85
April	3,740	320	1,060	4.02	4.48
May	4,830	137	514	1.95	2.25
June	3,040	149	744	2.82	3.15
July	1,860	137	564	2.14	2.47
August	320	5.4	85.1	.322	.37
September	82	11	31.8	.120	.13
The Year	9,500	2.7	667	2.53	34.39

OHIO BASIN—STATION NO. 17

KISKIMINITAS RIVER AT AVONMORE

Location.—At four-span steel highway bridge, Avonmore, Westmoreland County.

Drainage Area.—1,720 square miles.

Records Available.—May 29, 1907, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by J. H. Shupe. Elevation of gage zero 805.64 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left is low and overflows at high stages. Bed is composed of gravel. Control is at the first of a series of riffles about 300 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 25.10 feet at 1 p. m. October 20 (discharge, about 56,300 second-feet); minimum, 2.84 feet from 8.45 a. m. September 29 to 5 p. m. September 30 (discharge, 401 feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 30,000 second-feet Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Kiskiminitas River at Avonmore during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
45	Aug. 21	S. A. Kowalchik	3.33	602

Measurement made by wading 2,000 feet upstream from gage.

Daily Mean Gage Height, in feet, of Kiskiminitas River at Avonmore, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.13	4.28	9.25	6.95	11.12	6.45	10.84	18.27	4.07	8.21	4.51	3.21
2	3.11	4.12	3.00	7.30	10.50	6.08	9.59	13.22	3.97	7.21	5.78	3.13
3	3.08	6.00	7.55	8.55	10.61	5.72	8.75	10.47	4.02	6.38	4.88	3.06
4	4.90	11.70	6.78	8.60	10.90	5.42	9.67	8.75	4.32	5.94	4.74	3.04
5	4.67	10.20	6.35	8.68	14.90	5.72	8.62	7.72	7.47	8.06	4.36	3.02
6	3.80	9.20	6.10	8.75	10.90	5.35	7.82	6.92	9.67	8.94	4.18	3.01
7	3.52	8.00	5.85	9.02	8.35	5.25	7.87	6.27	8.67	7.08	3.98	3.01
8	3.48	7.15	6.85	8.85	8.50	5.05	13.30	5.85	7.47	6.18	3.94	3.00
9	3.42	6.68	7.78	8.80	10.05	5.60	10.57	5.52	7.97	5.48	3.86	2.99
10	3.35	6.30	6.35	8.85	9.45	7.70	8.92	5.32	10.22	6.18	3.71	2.92
11	3.27	6.25	6.55	8.40	7.98	7.05	8.02	5.09	7.97	6.36	3.64	2.93
12	3.36	7.10	12.30	8.10	7.32	7.40	10.44	5.82	6.87	9.56	3.94	2.91
13	6.15	6.60	13.90	6.35	6.65	8.82	10.50	4.99	6.07	8.91	3.56	2.91
14	6.30	6.08	16.50	5.05	6.75	10.90	9.35	4.65	5.57	12.36	3.46	2.92
15	5.05	5.82	12.90	4.88	12.30	9.87	9.62	4.42	5.35	10.36	3.41	2.99
16	4.50	5.62	11.30	4.72	11.25	8.55	8.37	4.37	4.85	7.76	3.66	2.99
17	4.18	5.75	10.30	4.65	9.45	7.77	7.59	4.39	4.49	6.64	3.61	2.96
18	5.35	7.10	9.00	4.78	8.50	7.39	7.05	4.37	4.62	5.88	3.44	2.99
19	16.72	6.52	7.85	4.85	7.52	6.97	6.55	4.47	8.17	5.44	3.41	2.99
20	22.76	5.85	6.88	6.70	6.95	6.52	6.07	4.92	9.27	6.51	3.36	3.18
21	16.90	5.52	6.85	6.45	6.32	6.65	5.75	4.87	7.27	6.86	3.34	3.31
22	11.20	5.42	6.30	9.10	5.85	7.29	7.67	4.72	11.47	6.11	3.32	3.30
23	8.80	5.30	5.90	10.10	7.08	9.99	10.47	4.37	10.02	8.66	3.35	3.13
24	7.55	5.20	5.52	10.43	10.95	10.97	11.02	4.17	10.43	7.31	3.27	2.95
25	6.45	5.58	5.05	9.85	9.60	10.39	10.35	4.07	9.57	5.86	3.55	2.90
26	5.88	5.30	4.75	9.30	7.85	10.20	9.22	4.02	8.09	5.18	3.55	2.90
27	5.40	5.80	6.55	11.60	6.88	9.82	8.32	3.99	7.22	4.75	3.40	2.97
28	5.05	11.90	7.85	12.75	6.52	8.52	9.47	4.05	6.47	5.04	3.32	2.88
29	4.80	13.25	6.05	11.77	6.18	7.67	10.27	4.17	6.69	4.58	3.25	2.84
30	4.58	10.45	5.90	11.15	-------	13.67	15.77	4.07	8.07	4.24	3.18	2.84
31	4.38	-------	6.25	11.10	-------	14.82	-------	4.15	-------	4.01	3.18	-------

NOTE—Stage-discharge relation Dec. 27-29, Jan. 1-13 and Jan. 22 to Feb. 6 affected by ice.

Daily discharge, in second-feet, of Kiskiminitas River at Avonmore, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	556	1,360	7,700	2,400	2,000	3,560	10,700	30,800	1,200	6,080	1,540	583
2	528	1,200	5,780	1,700	2,200	3,200	8,430	16,200	1,120	4,600	2,850	556
3	528	3,080	5,170	1,600	2,400	2,740	7,020	10,100	1,120	3,560	1,910	502
4	1,910	12,600	4,080	1,600	6,000	2,410	8,620	7,020	1,360	2,960	1,720	502
5	1,720	9,550	3,560	1,600	9,000	2,740	6,700	5,320	5,020	5,930	1,460	475
6	982	7,700	3,200	1,700	7,000	2,410	5,470	4,210	8,620	7,190	1,280	475
7	770	5,780	2,850	1,900	6,380	2,200	5,620	3,440	6,860	4,470	1,120	475
8	770	4,600	4,080	2,400	6,540	2,000	16,400	2,850	5,020	3,320	1,050	475
9	702	3,950	5,470	2,800	9,170	2,630	10,300	2,520	5,780	2,520	1,050	475
10	671	3,440	3,560	2,800	8,060	5,320	7,190	2,300	9,550	3,320	910	424
11	612	3,320	3,820	2,800	5,780	4,340	5,780	2,100	5,780	3,560	840	450
12	671	4,470	14,000	2,600	4,740	4,880	9,930	2,300	4,210	8,430	1,050	424
13	3,320	3,820	17,900	2,200	3,820	7,020	10,100	2,000	3,200	7,190	840	424
14	3,440	3,200	25,200	2,000	4,080	10,900	8,060	1,630	2,630	14,300	735	424
15	2,000	2,850	15,400	1,910	14,000	8,980	8,430	1,460	2,410	10,100	702	475
16	1,540	2,630	11,800	1,720	11,500	6,700	6,380	1,460	1,820	5,470	910	475
17	1,280	2,850	9,740	1,630	8,060	5,470	5,170	1,460	1,540	3,820	840	450
18	2,410	4,470	7,360	1,820	6,540	4,880	4,340	1,460	1,630	2,960	736	475
19	25,800	3,690	5,470	1,820	5,020	4,340	3,820	1,540	6,080	2,410	702	475
20	44,400	2,850	4,210	3,950	4,340	3,690	3,200	1,910	7,880	3,690	671	583
21	26,400	2,520	4,080	3,560	3,440	3,820	2,850	1,910	4,740	4,210	671	640
22	11,500	2,410	3,440	2,600	2,850	4,740	5,320	1,720	12,200	3,200	640	640
23	7,020	2,300	2,960	2,800	4,470	7,880	10,100	1,460	9,170	6,860	671	556
24	5,170	2,200	2,520	5,500	11,100	11,100	11,100	1,280	9,930	4,740	612	450
25	3,560	2,630	2,000	4,800	8,430	9,930	9,930	1,200	8,430	2,960	840	424
26	2,960	2,300	1,820	3,600	5,470	9,550	7,700	1,120	5,930	2,200	840	424
27	2,410	2,850	1,600	2,800	4,210	8,800	6,230	1,120	4,600	1,820	702	450
28	2,000	13,100	1,800	2,600	3,690	6,540	8,240	1,120	3,690	2,000	640	424
29	1,320	16,200	2,200	2,200	3,320	5,220	9,740	1,280	3,950	1,630	612	401
30	1,630	9,930	2,960	2,000	-------	17,400	23,100	1,200	5,930	1,280	583	401
31	1,460	-------	3,320	1,900	-------	20,300	-------	1,280	-------	1,120	583	-------

NOTE—Discharge Dec. 27-29, Jan. 1-13 and Jan. 22 to Feb. 6 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Stony Creek at Johnstown, Blacklick Creek at Blacklick and Loyalhanna Creek at New Alexandria.

Monthly discharge of Kiskiminitas River at Avonmore, for the year ending Sept. 30, 1928
(Drainage area 1,720 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet mile per square	inches Depth in
October	44,400	528	5,180	3.01	3.47
November	16,200	1,200	4,800	2.79	3.11
December	25,200	1,600	6,100	3.55	4.09
January	5,500	1,600	2,490	1.45	1.67
February	14,000	2,000	5,990	3.48	3.75
March	20,300	2,000	6,320	3.67	4.23
April	23,100	2,850	8,200	4.77	5.32
May	30,800	1,120	3,770	2.19	2.52
June	12,200	1,120	5,050	2.94	3.28
July	14,300	1,120	4,450	2.59	2.99
August	2,850	583	978	.569	.66
September	640	401	480	.279	.31
The Year	44,400	401	4,470	2.60	35.40

OHIO BASIN—STATION NO. 18

KISKIMINITAS RIVER AT VANDERGRIFT

Location.—At pumping station of the American Sheet and Tin Plate Company, about 300 feet downstream from the Pennsylvania Railroad Station, Vandergrift, Westmoreland County.

Drainage Area.—1,830 square miles.

Records Available.—November 1, 1915, to September 30, 1928.

Gage.—A float type gage is installed at the pumping station. The float operates in a 3 inch pipe inserted in the pump house well, which is fed by gravity from the river. Gage heights are indicated on a vertical staff inside the pumping station; read to inches twice daily by employes of American Sheet and Tin Plate Company; during high stages more frequently. Elevation of gage zero 767.14 feet, United States Geological Survey datum.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and rock.

Extremes of Stage.—Maximum gage height during the year estimated from hydrograph, 25.00 feet at 3 p. m. October 14; minimum, 3.42 feet from 6 a. m. October 2 to 6 a. m. October 4.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintaintd in cooperation with the American Sheet and Tin Plate Company, Vandergrift, Pennsylvania.

Daily Mean Gage Height, in feet, of Kiskiminitas River at Vandergrift, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.50	5.33	9.70	6.83	5.34	6.50	11.71	18.50	4.83	8.42	5.05	4.00
2	3.42	5.33	8.55	6.83	5.17	6.46	9.96	14.04	4.75	7.80	6.70	4.00
3	3.42	6.80	8.10	5.00	5.25	6.34	9.17	11.00	4.75	7.12	5.83	3.96
4	4.60	12.10	7.58	4.83	5.33	6.08	9.75	9.54	4.90	6.70	5.46	3.83
5	5.90	10.71	7.04	4.83	10.60	6.08	9.30	8.54	7.70	7.75	5.12	3.83
6	5.08	9.62	6.83	4.92	10.60	6.29	8.46	7.71	10.10	9.71	5.08	3.83
7	4.67	8.63	6.62	5.12	8.85	5.62	8.04	7.12	9.33	7.92	4.88	3.83
8	4.46	7.75	6.90	5.92	8.50	5.62	12.50	6.83	8.25	7.12	4.71	3.83
9	4.46	7.34	9.00	6.00	10.04	5.65	11.12	6.66	8.15	6.38	4.71	3.83
10	4.42	6.92	7.58	6.04	9.83	7.80	9.30	6.42	10.12	6.83	4.62	3.79
11	4.29	6.83	6.90	6.00	8.62	7.46	8.46	6.16	9.08	6.92	4.42	3.67
12	4.21	7.21	11.50	5.96	7.79	7.29	10.05	6.17	7.75	9.00	4.34	3.67
13	6.58	7.17	13.80	5.92	7.25	7.65	11.35	6.12	7.04	9.60	4.25	3.67
14	7.38	6.92	16.70	5.75	6.95	9.90	9.90	5.79	6.50	11.80	4.12	3.67
15	6.16	6.66	13.60	5.50	11.80	10.12	9.92	5.58	6.29	10.58	3.96	3.67
16	5.58	6.50	11.70	5.46	11.67	8.71	9.00	5.33	5.92	8.54	4.21	3.67
17	5.33	6.46	11.50	5.29	9.70	8.08	8.17	5.25	5.50	7.42	4.46	3.67
18	6.00	7.29	10.90	5.25	8.71	7.66	7.46	5.25	5.46	6.84	4.34	3.67
19	16.60	7.34	8.85	5.25	7.75	7.20	7.20	5.21	7.85	6.29	4.17	3.67
20	22.85	6.66	8.40	6.40	7.00	6.88	6.88	5.42	10.15	6.25	4.00	3.67
21	17.70	6.42	7.12	7.50	7.29	6.84	6.42	5.54	8.00	7.30	4.00	3.88
22	11.80	6.25	6.92	5.90	7.00	7.75	7.65	5.50	12.15	6.50	4.00	4.00
23	9.42	6.25	6.58	6.33	6.90	8.79	10.62	5.38	10.60	8.60	4.21	3.96
24	8.12	6.00	6.29	6.17	10.70	10.30	11.00	5.17	10.95	7.92	4.38	3.83
25	7.38	5.83	6.12	6.66	9.70	10.50	10.79	4.96	10.08	6.75	4.33	3.75
26	6.62	5.96	5.50	7.67	8.25	10.20	9.71	4.83	8.79	5.96	4.42	3.75
27	6.25	6.10	5.54	6.58	7.50	9.96	8.71	4.83	8.00	5.58	4.42	3.67
28	5.96	11.00	5.29	6.25	6.79	8.79	8.96	4.83	7.42	5.54	4.42	3.67
29	5.75	13.70	6.60	6.00	6.50	8.04	9.88	4.79	6.96	5.46	4.29	3.67
30	5.42	11.42	6.21	5.75	-------	13.70	15.30	4.83	7.92	5.17	4.17	3.67
31	5.33	-------	6.58	5.34	-------	14.84	-------	4.83	-------	4.83	4.08	-------

NOTE—Stage-discharge relation Jan. 7-9 and Jan. 25 to Feb. 3 affected by ice.

OHIO BASIN—STATION NO. 19

SOUTH FORK TEN MILE CREEK AT POLLOCK'S MILL

Location.—At single-span steel highway bridge, about two miles downstream from Jefferson, at Pollock's Mill, Greene County.

Drainage Area.—190 square miles.

Records Available.—June 22, 1915, to September 30, 1928.

Gage.—Vertical staff attached to downstream corner of right abutment; read to hundredths twice daily by James M. Pollock.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left begins to overflow at a stage of about 7 feet. Bed is a formation of rock shingle and gravel. Control is at a riffle about 200 feet downstream from the gage; may shift occasionally.

Extremes of Stage.—Maximum gage height during the year, 7.00 feet at 7 a. m. December 14; minimum 1.10 feet from 7 a. m. October 1 to 6 p. m. October 3.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh, Pennsylvania.

Discharge measurements of South Fork Ten Mile Creek at Pollock's Mill during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
21	June 7	Geo. Weber	2.15	197
22	Aug. 16a	S. A. Kowalenik	1.38	8.77

a Measurement made by wading 1,300 downstream from gage.

Daily Mean Gage Height, in feet, of South Fork Ten Mile Creek at Pollock's Mill, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.10	1.50	2.79	2.00	1.90	2.05	2.70	3.40	1.74	2.65	1.75	2.00
2	1.10	1.56	2.65	2.00	1.85	1.94	2.67	2.70	1.72	2.45	1.85	1.70
3	1.10	2.24	2.45	2.00	1.72	1.97	2.55	2.35	1.69	2.20	1.83	1.65
4	1.39	2.64	2.32	1.97	1.65	1.88	2.25	2.23	1.73	2.10	1.71	1.53
5	1.28	2.90	2.23	1.95	2.70	2.35	2.13	2.17	2.25	2.26	1.70	1.47
6	1.20	2.65	2.15	1.93	2.40	2.10	2.07	1.98	2.70	2.14	1.70	1.39
7	1.25	2.20	2.04	1.91	2.10	1.93	2.12	1.85	2.25	1.97	1.70	1.37
8	1.30	2.04	1.96	1.90	3.40	1.93	2.55	1.80	2.07	1.89	1.62	1.34
9	1.28	2.25	1.99	1.90	3.55	2.23	2.33	1.79	2.25	1.90	1.60	1.32
10	1.28	2.09	1.85	1.90	3.10	2.73	2.13	1.75	2.60	1.87	1.58	1.30
11	1.28	1.93	1.90	1.99	2.70	2.38	2.15	1.71	2.46	1.75	1.53	1.29
12	1.38	1.85	4.25	1.88	2.25	2.31	2.90	1.77	2.25	1.75	1.50	1.28
13	1.65	1.86	4.50	1.87	2.14	2.15	2.53	1.68	2.05	1.86	1.49	1.27
14	1.68	1.76	5.96	1.82	2.40	2.20	2.65	1.60	1.97	2.80	1.44	1.26
15	1.65	1.69	4.60	1.78	3.45	2.15	2.45	1.60	1.93	2.35	1.40	1.25
16	1.48	1.61	4.00	1.76	2.75	2.16	2.40	1.60	1.85	2.05	1.39	1.24
17	1.40	4.10	3.25	1.74	2.60	2.13	2.32	1.67	1.78	1.98	1.38	1.21
18	2.50	3.85	2.75	1.71	2.60	2.10	2.15	1.63	1.71	1.84	1.40	1.18
19	3.75	3.30	2.56	2.40	2.30	2.10	2.10	1.60	1.85	1.75	1.40	1.39
20	2.85	2.59	2.46	2.70	2.19	2.20	2.03	2.25	2.00	1.78	1.38	1.90
21	2.95	2.22	2.00	2.46	2.13	3.00	2.40	1.86	1.95	2.60	1.36	1.85
22	2.45	2.20	2.03	2.25	2.00	3.00	3.60	1.85	3.30	2.55	1.40	1.68
23	2.00	2.09	2.07	2.05	3.10	3.08	3.80	1.73	2.70	2.27	1.40	1.45
24	1.77	2.07	1.89	1.94	3.70	2.75	3.20	1.68	3.40	2.15	1.40	1.40
25	1.70	2.05	1.83	3.00	2.60	2.35	2.60	1.65	3.50	2.08	1.43	1.38
26	1.68	2.03	1.69	2.55	2.30	3.00	2.60	1.61	3.40	1.85	1.41	1.34
27	1.66	2.25	1.63	2.15	2.17	2.75	2.53	1.60	2.85	1.73	1.39	1.31
28	1.56	4.05	1.61	2.00	2.05	2.45	2.50	1.60	2.40	1.80	1.37	1.29
29	1.50	3.40	1.59	1.99	2.00	2.25	4.15	1.60	2.80	1.83	1.35	1.28
30	1.50	2.88	1.96	2.15	-------	5.05	4.50	1.60	3.15	1.71	1.37	1.28
31	1.50	-------	2.09	2.04	-------	3.60	-------	1.88	-------	1.65	2.22	-------

NOTE—Stage-discharge relation Dec. 22-27, Jan. 2-9 and Jan. 30 to Feb. 3 affected by ice.

OHIO BASIN—STATION NO. 20

MONONGAHELA RIVER AT SOUTH BROWNSVILLE

Location.—At four-span steel highway bridge, known as Brownsville Bridge, South Brownsville, Fayette County, about one-quarter of a mile downstream from Lock No. 5.

Drainage Area.—5,130 square miles.

Records Available.—February 18, 1915, to September 30, 1928.

Gage.—Staff in two sections; lower is vertical staff at Lock No. 5 attached to downstream side of middle wall, graduated from zero to 32.4 feet; upper is sloping staff about 200 feet downstream from the lower lock gate on railroad enbankment, graduated from 31.0 feet to 45.5 feet. Gage read to tenths twice daily by Charles W. Keibler during high stages more frequently. Elevation of gage zero 726.23 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge until August 1919, when they were discontinued owing to the use of flashboards on the control.

Channel and Control.—Right bank is high and not subject to overflow; left is overflowed during extremely high stages. Control is Lock and Dam No. 4. Flashboards are used on the dam during low water which affect the stage-discharge relation.

Extremes of Stage.—Maximum gage height during the year, 33.10 feet observed at 8 a. m. May 1; minimum, 10.90 feet at 8 a. m. October 1 and July 30.

Ice.—Stage-discharge relation rarely affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh, Pennsylvania.

Daily Mean Gage Height, in feet, of Monongahela River at South Brownsville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11.00	11.80	15.70	14.20	12.40	13.30	15.40	31.90	12.75	15.15	11.55	13.80
2	11.35	11.95	14.90	14.70	12.30	13.00	14.85	25.10	12.95	15.65	14.00	12.75
3	11.35	13.20	15.85	14.80	11.90	12.90	14.30	19.50	11.80	14.75	13.90	12.80
4	11.35	16.90	16.20	14.00	11.65	11.90	13.60	16.25	12.50	13.30	13.40	12.65
5	11.70	18.15	15.50	13.90	12.35	12.20	13.75	15.20	13.75	13.10	12.80	12.55
6	11.75	16.55	14.80	12.95	13.40	12.85	13.75	13.15	13.50	12.70	12.65	12.35
7	11.70	14.90	14.10	12.65	15.10	12.70	13.25	12.85	13.95	12.60	12.85	12.35
8	11.30	14.70	13.75	12.70	15.80	12.50	13.45	12.64	14.65	11.65	12.55	12.20
9	11.30	14.70	14.00	12.50	17.20	12.70	14.15	12.60	14.50	11.20	12.35	12.00
10	11.25	17.00	14.00	12.75	17.85	14.40	14.15	12.35	14.70	12.00	12.40	11.80
11	11.35	17.40	13.20	12.50	16.80	15.60	13.40	12.10	16.50	13.15	12.40	11.90
12	11.80	16.20	16.60	12.55	14.80	14.70	18.00	11.95	16.20	13.20	12.10	11.80
13	12.20	14.45	24.70	12.45	13.60	14.40	20.40	11.40	14.85	13.50	11.80	11.75
14	13.25	13.80	30.50	12.75	13.65	14.30	17.70	11.45	14.35	14.80	11.55	11.85
15	12.95	13.75	24.40	12.30	15.80	13.75	15.30	11.70	13.90	14.60	11.50	11.65
16	12.50	13.50	20.60	11.56	16.00	13.90	14.20	11.80	12.90	13.20	11.60	11.55
17	12.40	15.10	18.35	11.80	15.75	14.55	13.65	11.70	11.85	11.90	11.85	11.50
18	13.20	18.00	16.15	11.70	15.30	14.35	13.40	11.60	11.55	11.35	12.75	11.55
19	16.30	17.60	15.05	12.10	14.40	15.40	12.85	11.70	11.90	11.10	12.85	11.75
20	21.00	15.65	15.00	14.90	13.30	14.50	12.85	11.80	15.70	11.35	13.50	11.95
21	23.75	14.80	14.45	17.65	13.15	15.50	12.95	12.80	21.20	11.95	12.85	12.00
22	19.40	14.65	14.05	15.20	13.30	16.90	14.10	14.40	20.15	12.15	13.40	12.50
23	16.30	14.40	13.70	13.80	15.15	20.20	15.80	13.20	18.15	12.70	13.65	12.45
24	14.35	13.60	13.00	13.60	17.10	20.50	16.35	12.60	18.25	12.55	13.15	12.15
25	13.80	13.90	12.50	15.35	16.95	18.80	19.25	12.30	18.20	11.80	13.45	12.10
26	13.25	15.40	12.25	16.85	14.70	17.65	18.00	12.20	17.30	11.45	13.25	11.90
27	12.85	14.40	12.30	15.90	14.00	16.60	16.60	12.65	16.20	11.25	13.05	11.65
28	12.65	16.80	12.50	13.80	13.60	15.20	18.20	13.35	15.30	11.55	13.50	11.55
29	12.40	18.80	12.75	12.55	13.45	15.05	21.20	13.45	14.80	11.15	13.55	11.70
30	11.95	16.80	12.85	12.25	-------	16.40	27.70	12.55	15.45	10.95	13.30	11.55
31	11.70	-------	13.60	12.60	-------	17.90	-------	12.50	-------	11.15	13.70	-------

OHIO BASIN—STATION NO. 21

YOUGHIOGHENY RIVER AT FRIENDSVILLE, MD.

Location.—At two-span steel highway bridge, Friendsville, Garrett County, about 6,000 feet upstream from the mouth of Bear Creek.

Drainage Area.—295 square miles.

Records Available.—August 17, 1898, to December 31, 1904; September 1, 1922, to August 31, 1923, and October 1, 1923, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by J. W. Friend. Elevation of gage zero 1,467.82 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rock. Low-water control is at a riffle about 700 feet downstream from the gage, extending from the head of an island to the right and left banks, where the bed is composed of gravel and rock; probably permanent.

Extremes of Discharge.—Maximum stage during the year 9.82 feet observed at 7 a. m. May 1 (discharge, about 6,400 second-feet); minimum, 4.00 feet at 7 a. m. October 1 (discharge, 53 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—There are diurnal fluctuations in stage due to the operation of hydro-electric developments some distance upstream from the gage.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined from 100 to 1,500 second-feet and fairly well defined above and below those limits. Gage read to half-tenths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extreme stages, when they may be only fair.

Cooperation.—Station is maintained in cooperation with Charles B. Hawley and Company, Washington, D. C.

Discharge measurements of Youghiogheny River at Friendsville, Md., during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
26	Aug. 17	S. A. Kowalchik	4.63	238

Measurement made by wading 500 feet upstream from gage.

Daily Mean Gage Height, in feet, of Youghiogheny River at Friendsville, Md., for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.38	4.25	5.50	5.48	5.28	5.25	5.95	9.47	4.92	5.44	5.16	5.00
2	4.55	4.38	5.42	5.10	5.25	5.08	6.08	7.47	4.85	5.34	6.24	4.45
3	4.60	5.45	5.35	5.50	5.20	5.05	5.70	6.35	4.99	5.18	5.61	4.85
4	4.50	6.38	5.08	5.40	5.22	4.78	5.48	5.87	5.25	5.34	5.26	4.82
5	4.45	5.78	5.18	5.30	5.20	5.10	5.35	5.52	5.15	5.21	4.81	4.80
6	4.45	5.48	5.15	5.25	5.80	5.18	5.22	5.29	5.25	5.18	5.14	4.88
7	4.65	5.30	5.40	5.10	5.65	5.15	5.15	5.15	5.29	4.81	5.18	4.80
8	4.60	5.25	5.85	5.00	5.68	5.12	5.48	4.99	5.29	4.64	4.98	4.82
9	4.32	5.50	6.00	5.12	6.28	5.75	5.20	4.89	5.37	4.94	4.91	4.38
10	4.58	6.12	5.80	5.35	6.02	6.82	5.25	4.79	5.95	5.08	5.14	4.80
11	4.20	6.25	5.40	5.08	5.75	6.00	5.35	4.75	5.65	5.11	5.24	4.82
12	4.55	5.88	7.30	5.28	5.38	6.02	5.90	4.79	5.55	5.98	4.54	4.88
13	4.80	5.60	8.18	5.20	5.58	6.78	6.00	4.77	5.37	8.13	4.84	4.82
14	4.90	5.30	8.60	5.22	5.75	5.88	5.72	4.67	5.42	6.98	4.91	4.82
15	4.65	5.68	7.25	4.70	7.00	5.65	5.52	4.82	5.19	6.01	4.41	4.80
16	4.40	5.02	6.58	4.92	6.33	5.50	5.47	4.77	4.75	5.66	4.84	4.90
17	4.55	5.25	6.30	5.25	5.98	5.32	5.35	4.65	4.65	5.41	5.08	4.80
18	4.70	5.72	5.68	5.52	5.70	5.25	5.33	4.62	4.99	5.21	4.98	4.82
19	6.10	5.35	5.72	5.75	5.32	5.10	5.15	4.72	4.99	5.01	4.55	4.85
20	8.15	6.05	5.58	6.68	5.45	5.18	5.02	4.75	5.75	4.94	4.45	4.98
21	7.10	5.15	5.68	5.85	5.38	5.08	4.87	5.39	5.47	5.11	4.90	4.95
22	6.00	5.18	5.85	5.58	5.60	5.30	5.07	4.97	5.47	4.81	5.12	4.88
23	5.38	5.10	5.42	5.75	5.32	6.65	5.49	4.82	5.62	5.71	5.02	4.88
24	5.50	4.92	5.22	5.45	6.35	7.42	6.47	4.75	5.92	5.38	4.98	4.75
25	5.08	5.22	5.12	6.40	6.00	7.10	6.39	4.79	5.92	5.04	5.12	4.58
26	5.02	5.12	5.15	6.00	5.48	6.55	6.45	4.89	5.62	4.91	4.72	4.82
27	4.90	5.10	5.32	5.60	5.75	6.15	5.72	4.87	5.45	4.88	5.12	4.80
28	4.78	5.68	5.40	5.58	5.52	5.82	5.72	4.85	5.32	5.08	4.95	4.80
29	4.75	5.88	5.25	5.02	5.28	5.55	5.93	4.79	5.42	4.64	4.92	4.72
30	4.62	5.60	5.78	5.45	-------	6.05	8.37	4.87	5.45	4.76	4.90	4.82
31	4.75	-------	5.48	5.40	-------	6.50	-------	4.92	-------	4.74	5.05	-------

NOTE—Stage-discharge relation Dec. 21-28, Jan. 3-7, 12-14, 23, Jan. 28 to Feb. 4, Feb. 20-22, 27 and 28 affected by ice.

Daily discharge, in second-feet, of Youghiogheny River at Friendsville, Md., for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	150	110	828	828	300	624	1,210	5,920	400	786	550	449
2	214	150	744	515	300	515	1,360	3,090	360	704	1,470	174
3	235	786	704	380	340	482	985	1,700	443	586	908	360
4	193	1,700	515	360	420	322	828	1,120	624	704	624	343
5	174	1,070	586	360	586	515	704	828	550	586	338	360
6	174	828	550	360	1,070	586	586	663	624	586	550	377
7	258	663	744	380	946	550	550	550	663	338	586	352
8	235	624	1,120	449	985	515	528	443	663	253	437	343
9	130	828	1,260	515	1,580	1,030	586	382	704	412	394	150
10	227	1,360	1,070	704	1,260	2,190	624	327	1,210	515	550	332
11	97	1,470	744	515	1,030	1,260	704	306	946	515	624	343
12	214	1,160	2,830	380	744	1,260	1,160	327	868	1,260	210	377
13	332	908	4,000	390	908	1,070	1,260	317	704	3,870	354	343
14	388	663	4,570	280	1,030	1,160	985	267	744	2,440	394	343
15	258	985	2,700	281	2,440	946	828	343	586	1,260	160	332
16	156	449	1,950	400	1,580	828	786	317	306	946	354	388
17	214	624	1,580	624	1,260	663	704	258	258	744	515	332
18	281	985	985	828	985	624	704	244	443	586	437	343
19	1,360	704	985	1,030	663	515	550	291	443	449	214	360
20	4,000	482	908	2,070	480	586	449	306	1,030	412	174	437
21	2,570	550	700	1,120	420	515	371	744	786	515	388	418
22	1,260	586	550	908	440	663	482	431	786	338	515	377
23	744	515	440	650	663	1,950	828	343	908	985	449	377
24	828	400	360	786	1,700	2,960	1,820	306	1,160	744	437	306
25	515	586	340	1,700	1,260	2,570	1,700	327	1,160	482	515	227
26	449	515	300	1,260	828	1,950	1,700	443	908	394	291	343
27	388	515	340	908	600	1,470	985	371	786	377	515	332
28	322	985	380	600	600	1,070	985	360	663	515	418	332
29	306	1,160	624	380	663	868	1,210	327	744	253	400	291
30	244	908	1,070	340	-------	1,260	4,280	371	786	312	388	343
31	306	-------	828	300	-------	1,820	-------	400	-------	301	482	-------

NOTE—Discharge Dec. 21-28, Jan. 3-7, 12-14, 23, Jan. 28 to Feb. 4, 20-22, 27 and 28 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Laurel Hill Creek at Ursina, Casselman River at Markleton and Youghiogheny River at Connellsville.

Monthly discharge of Youghiogheny River at Friendsville, Md., for the year ending Sept. 30, 1928

(Drainage area 295 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	4,000	97	556	1.88	2.17
November	1,700	110	776	2.63	2.93
December	4,570	300	1,140	3.86	4.45
January	2,070	280	662	2.24	2.58
February	2,440	300	899	3.05	3.29
March	2,960	322	1,080	3.66	4.22
April	4,280	371	1,030	3.49	3.89
May	5,920	244	723	2.45	2.82
June	1,210	258	709	2.40	2.68
July	3,870	253	747	2.53	2.92
August	1,470	160	472	1.60	1.84
September	449	150	339	1.15	1.28
The Year	5,920	97	769	2.58	35.07

OHIO BASIN—STATION NO. 22

CASSELMAN RIVER AT MARKLETON

Location.—At two-span steel highway bridge, Markleton, Somerset County.

Drainage Area.—365 square miles.

Records Available.—August 13, 1913, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by N. B. Sanner.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Control is a 6 inch water main, backed with gravel and boulders, about 250 feet downstream from the gage, at the head of a series of riffles; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 10.00 feet observed at 9 p. m. April 30 (discharge, about 13,600 second-feet); minimum, 1.79 feet at 5 p. m. October 2 (discharge, 29 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 2,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results goods.

Discharge measurements of Casselman River at Markleton during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
22	Aug. 17	S. A. Kowalchik	2.09	95.9

Measurement made by wading 300 feet downstream from gage.

Daily Mean Gage Height, in feet, of Casselman River at Markleton, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.84	2.68	3.66	3.62	3.16	3.50	4.40	7.90	2.62	3.74	2.90	2.10
2	1.80	2.64	3.50	3.71	2.95	3.20	4.42	6.00	2.60	3.38	3.10	2.10
3	1.87	4.50	3.44	3.07	2.99	3.18	4.28	5.05	2.67	3.20	2.76	2.02
4	2.58	4.95	3.30	3.06	3.00	2.92	4.00	4.50	2.90	3.08	2.52	2.02
5	2.40	4.42	3.27	3.06	4.40	3.26	3.80	4.18	3.85	3.60	2.43	1.96
6	2.12	4.12	3.22	3.14	3.98	2.99	3.66	3.91	3.42	3.30	2.42	1.96
7	2.04	3.85	3.34	3.10	3.58	3.02	3.75	3.70	3.45	3.02	2.42	1.94
8	1.98	3.66	4.75	3.12	3.80	3.10	5.25	3.52	3.32	2.86	2.36	1.97
9	1.95	3.62	4.12	3.20	4.55	3.80	4.30	3.38	3.55	2.93	2.29	1.95
10	1.93	3.83	3.72	3.12	3.95	4.62	4.00	3.26	3.78	3.20	2.30	1.90
11	1.90	4.45	3.78	3.03	3.76	4.11	3.82	3.20	3.44	3.01	2.31	1.88
12	2.18	4.16	5.80	3.03	3.55	4.08	4.69	3.34	3.25	3.02	2.22	1.86
13	3.70	3.81	5.85	3.01	3.32	4.48	4.59	3.13	3.18	3.02	2.26	1.82
14	2.91	3.62	6.50	2.95	3.68	4.76	4.50	2.98	3.04	4.25	2.20	1.81
15	2.58	3.48	5.12	2.90	4.70	4.32	4.26	2.90	2.94	3.58	2.14	1.82
16	2.42	3.38	4.71	2.80	4.11	4.06	3.95	2.85	2.82	3.21	2.10	2.40
17	2.32	3.35	4.44	2.92	3.88	3.84	3.82	2.84	2.71	3.02	2.12	2.15
18	3.70	3.67	4.05	3.12	3.84	3.75	3.70	2.92	2.76	2.88	2.30	1.98
19	6.80	3.35	3.66	3.05	3.42	3.64	3.52	2.85	3.70	2.78	2.31	2.00
20	7.35	3.17	3.55	4.55	3.51	3.54	3.36	2.86	4.25	2.84	2.16	2.70
21	5.50	3.14	3.52	3.50	3.12	3.55	3.35	2.91	3.68	3.12	2.08	2.76
22	4.36	3.15	3.55	3.30	3.16	3.75	4.05	2.84	3.82	2.98	2.17	2.39
23	3.92	3.05	3.33	3.42	3.34	5.05	4.12	2.72	3.50	3.55	2.15	2.20
24	3.58	3.06	3.18	3.30	4.25	5.75	4.80	2.65	4.45	3.40	2.13	2.08
25	3.35	3.12	2.98	4.60	3.70	5.40	4.75	2.63	4.25	2.92	2.80	2.06
26	3.18	3.02	2.87	4.10	3.34	4.92	4.28	2.72	3.82	2.74	2.52	2.05
27	3.06	3.15	2.81	3.58	3.23	4.60	4.08	2.65	3.62	2.66	2.28	2.02
28	2.96	4.65	2.87	3.56	3.34	4.24	4.12	2.61	3.38	2.80	2.17	1.98
29	2.88	4.22	3.06	3.18	3.39	3.95	4.35	2.62	3.90	2.69	2.12	1.96
30	2.80	3.88	3.51	3.17	-------	5.25	7.30	2.59	3.76	2.51	2.08	2.04
31	2.74	-------	3.58	3.12	-------	4.88	-------	2.65	-------	2.42	2.10	-------

NOTE—Stage-discharge relation Jan. 4-7, 23, Jan. 28 to Feb. 3 and Feb. 17-20 affected by ice.

Daily discharge, in second-feet, of Casselman River at Markleton, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	224	314	771	320	691	1,570	7,900	203	901	316	68
2	30	210	691	856	320	481	1,570	3,990	196	616	421	68
3	87	1,690	654	394	320	481	1,460	2,310	220	481	255	55
4	190	2,310	546	360	366	326	1,140	1,690	316	421	172	55
5	138	1,570	514	340	1,570	514	946	1,350	994	771	146	47
6	72	1,240	481	360	1,140	361	814	1,040	616	546	144	47
7	58	994	581	400	771	366	901	856	654	365	144	45
8	50	814	2,050	421	946	421	2,580	691	546	298	128	48
9	46	771	1,240	481	1,800	946	1,460	616	731	331	110	46
10	44	994	856	421	1,090	1,800	1,140	514	946	514	112	40
11	40	1,570	946	394	901	1,240	946	481	654	366	115	38
12	84	1,350	3,570	394	731	1,240	1,920	581	514	366	93	36
13	856	946	3,570	366	546	1,690	1,800	451	481	366	102	32
14	321	771	4,800	341	856	2,050	1,690	356	394	1,350	88	31
15	190	691	2,440	316	1,920	1,460	1,460	316	336	771	76	32
16	144	616	1,920	271	1,240	1,240	1,090	294	280	481	68	138
17	117	581	1,570	326	900	994	946	289	235	366	72	78
18	856	814	1,140	421	650	901	856	326	255	307	112	50
19	5,450	581	814	394	480	814	691	294	856	263	115	52
20	6,700	451	731	1,800	460	731	581	298	1,350	289	80	231
21	3,040	451	691	691	421	731	581	321	856	421	65	255
22	1,570	451	731	546	451	901	1,140	289	946	356	82	135
23	1,040	394	581	500	581	2,310	1,240	239	691	731	78	88
24	771	394	481	546	1,350	3,570	2,050	214	1,570	616	74	65
25	581	421	356	1,800	856	2,880	2,050	206	1,350	326	271	62
26	481	366	302	1,240	581	2,180	1,460	239	946	247	172	60
27	394	451	276	771	514	1,800	1,240	214	771	217	107	55
28	346	1,800	302	500	581	1,350	1,240	200	616	271	82	50
29	307	1,350	394	360	616	1,090	1,570	203	1,040	228	72	47
30	271	1,040	691	340	-------	2,580	6,500	193	901	169	65	58
31	247	-------	771	320	-------	2,180	-------	214	-------	144	68	------

NOTE—Discharge Jan. 4-7, 23, Jan. 28 to Feb. 3 and Feb. 17-20 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Laurel Hill Creek at Ursina and Stony Creek at Johnstown.

Monthly discharge of Casselman River at Markleton, for the year ending Sept. 30, 1928

(Drainage area 365 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	6,700	30	790	2.16	2.49
November	2,310	210	877	2.40	2.68
December	4,800	276	1,150	3.15	3.63
January	1,800	271	563	1.54	1.78
February	1,920	320	803	2.20	2.37
March	3,570	326	1,300	3.56	4.10
April	6,500	581	1,490	4.08	4.55
May	7,900	193	877	2.40	2.77
June	1,570	196	682	1.87	2.09
July	1,350	144	448	1.23	1.42
August	421	65	129	.353	.41
September	255	31	70.4	.193	.22
The Year	7,900	30	764	2.09	28.51

OHIO BASIN—STATION NO. 23

LAUREL HILL CREEK AT URSINA

Location.—At two-span steel highway bridge, Ursina, Somerset County.

Drainage Area.—122 square miles.

Records Available.—August 12, 1913, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by Lizzie R. Case and Nancy Harned.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control is at a riffle, where the bed is composed of gravel and boulders, a short distance downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 8.20 feet at 8 p. m. October 19 (discharge, about 7,900 second-feet); minimum, 1.70 feet at 11 a. m. October 7 and 4 p. m. September 8 (discharge, 10 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 2,500 scond-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Laurel Hill Creek at Ursina during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
24	Aug. 17	S. A. Kowalchik	1.97	43.0

Measurement made by wading 100 feet downstream from gage.

Daily Mean Gage Height, in feet, of Laurel Hill Creek at Ursina, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.74	2.76	3.00	2.88	2.33	2.70	3.36	5.18	2.08	3.22	2.45	1.88
2	1.84	3.57	-------	2.67	2.39	2.63	3.26	3.85	2.10	2.84	2.24	1.85
3	1.90	3.69	2.70	2.70	2.32	2.44	3.11	3.39	2.12	2.78	2.18	1.77
4	2.10	3.26	2.64	2.56	2.30	2.35	2.92	2.99	2.88	2.53	2.06	1.73
5	2.20	3.22	2.52	2.51	3.85	2.47	2.79	2.81	3.50	2.85	2.01	1.77
6	1.89	2.86	2.53	2.54	3.30	2.42	2.79	2.76	3.09	2.70	2.05	1.82
7	1.76	2.40	2.38	2.62	2.86	2.36	2.85	2.55	3.04	2.48	2.08	1.81
8	1.85	2.38	2.52	2.52	2.95	2.50	3.70	2.47	2.88	2.40	2.05	1.75
9	1.83	2.50	2.66	2.56	3.45	2.98	3.13	2.38	3.06	2.32	1.98	1.77
10	1.81	2.57	2.63	2.39	2.96	3.28	2.88	2.34	2.91	2.54	1.96	1.75
11	1.80	2.75	2.95	2.41	2.82	2.92	2.78	2.28	2.83	2.42	2.13	1.77
12	1.95	2.80	5.20	2.38	2.70	3.02	3.52	2.39	2.61	2.44	2.01	1.79
13	2.55	2.96	4.80	2.30	2.59	3.36	3.45	2.26	2.50	3.34	1.96	1.77
14	2.22	2.95	5.65	2.35	2.85	3.88	3.34	2.23	2.41	4.10	1.94	1.74
15	2.70	2.90	4.15	2.35	3.62	3.45	3.09	2.22	2.36	3.20	1.89	1.77
16	2.09	2.86	3.35	2.33	3.28	3.18	2.92	2.20	2.19	2.68	1.93	1.88
17	1.96	3.05	3.15	2.36	2.78	2.62	2.78	2.22	2.15	2.48	1.94	1.94
18	3.65	2.85	2.90	2.44	2.81	3.82	2.66	2.13	2.14	2.36	1.99	1.81
19	7.30	2.58	2.77	2.41	2.52	2.66	2.54	2.18	2.43	2.29	2.08	1.86
20	6.35	2.38	2.71	3.12	2.66	2.61	2.46	2.21	2.42	2.36	1.92	2.05
21	4.66	2.55	2.82	2.72	2.47	2.58	2.56	2.29	2.79	2.30	1.86	2.00
22	3.50	2.70	2.65	2.64	2.52	2.82	3.20	2.25	3.17	2.24	2.00	1.94
23	2.96	2.21	2.60	2.60	2.42	3.52	3.28	2.18	2.84	2.54	1.94	1.98
24	2.78	2.64	2.71	2.55	3.16	3.90	3.68	2.18	3.32	2.91	1.93	1.83
25	2.50	2.44	2.53	3.26	2.90	3.80	3.68	2.14	2.83	2.50	1.94	1.89
26	2.30	2.40	2.61	2.92	2.66	3.62	3.29	2.15	2.68	2.28	1.90	1.96
27	2.34	2.60	2.40	2.64	2.65	3.40	3.11	2.10	2.54	2.22	1.87	1.89
28	2.23	4.15	2.20	2.54	2.64	3.01	3.13	2.12	2.42	2.28	1.83	1.80
29	2.10	3.80	2.32	2.37	2.52	2.89	3.20	2.16	2.95	2.13	1.86	1.80
30	2.24	3.23	2.60	2.42	-------	4.25	5.00	2.05	3.28	2.11	1.87	1.88
31	2.42	-------	2.78	2.38	-------	4.00	-------	2.16	-------	2.01	1.90	-------

NOTE—Gage height Dec. 2 not observed. Stage-discharge relation Dec. 23-27, Jan. 3-7, Jan. 30 to Feb. 2, Feb. 18-22, 27 and 28 affected by ice.

Daily discharge, in second-feet, of Laurel Hill Creek at Ursina, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	372	529	450	120	334	765	2,700	68	663	196	29
2	24	910	500	316	130	291	696	1,160	72	424	112	26
3	32	1,030	334	220	140	191	596	800	77	385	94	16
4	72	696	297	170	132	152	476	522	450	235	63	13
5	99	663	230	150	1,160	205	392	404	870	430	52	16
6	31	437	235	160	730	181	392	372	596	334	61	22
7	15	172	164	170	437	156	430	246	562	210	68	20
8	26	164	230	230	496	219	1,030	205	450	172	61	14
9	23	219	310	251	835	516	630	164	562	140	46	16
10	20	257	291	168	503	730	450	148	470	241	43	14
11	19	366	496	177	411	476	385	125	418	181	80	16
12	41	398	2,700	164	334	529	870	168	279	191	52	18
13	246	503	2,190	132	268	765	835	119	219	765	43	16
14	106	496	3,260	152	430	1,210	765	109	177	1,420	39	14
15	334	463	1,520	152	950	835	596	106	156	663	31	16
16	70	437	765	144	730	663	476	99	96	322	37	29
17	43	562	630	156	385	285	385	106	86	210	39	39
18	990	430	463	191	220	1,120	310	80	83	156	48	20
19	6,070	262	379	177	170	310	241	94	186	129	68	27
20	4,420	164	340	596	140	279	200	102	181	156	36	61
21	2,070	246	411	347	130	262	251	129	392	132	27	50
22	870	334	304	297	150	411	663	116	630	112	50	39
23	503	102	220	273	181	870	730	94	424	241	39	46
24	385	297	170	246	630	1,210	1,030	94	730	470	37	23
25	219	191	130	696	463	1,120	1,030	83	418	219	39	31
26	132	172	100	476	310	950	730	86	322	125	32	43
27	148	273	100	297	220	800	596	72	241	106	28	31
28	109	1,520	99	241	200	529	630	77	181	125	23	19
29	72	1,120	140	160	230	456	663	88	496	80	27	19
30	112	696	273	130	-------	1,520	2,440	61	730	75	28	29
31	181	-------	385	120	-------	1,310	-------	88	-------	52	32	-------

NOTE—Discharge estimated Dec. 2, because of no gage height record, from weather records and study of gage height graph, and Dec. 23-27, Jan. 3-7, Jan. 30 to Feb. 2, Feb. 18-22, 27 and 28, becaause of ice, from weather records, study of gage height graph and comparison with similar studies for Casselman River at Markleton, Stony Creek at Johnstown and Loyalhanna Creek at New Alexandria.

Monthly discharge of Laurel Hill Creek at Ursina, for the year ending Sept. 30, 1928

(Drainage area 122 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	6,070	14	564	4.62	5.33
November	1,520	164	465	3.81	4.25
December	3,260	99	587	4.81	5.54
January	696	120	245	2.01	2.32
February	1,160	120	387	3.17	3.42
March	1,520	152	609	4.99	5.75
April	2,440	200	656	5.38	6.00
May	2,700	61	284	2.33	2.69
June	870	68	354	2.90	3.24
July	1,420	52	296	2.43	2.80
August	196	23	52.6	.431	.50
September	61	13	25.7	.211	.24
The Year	6,070	13	377	3.09	42.08

OHIO BASIN—STATION NO. 24

YOUGHIOGHENY RIVER AT CONNELLSVILLE

Location.—At two-span steel highway bridge between New Haven and Connellsville, Fayette County.

Drainage Area.—1,320 square miles.

Records Available.—July 22, 1908, to September 30, 1928.

Gages.—Standard chain attached to downstream side of bridge; read by H. F. Atkins, employee of the West Penn Power Company until August 15, 1928, when an automatic water stage recorder was installed at the downstream end of the left abutment, which is inspected by employees of the West Penn Power Company. Elevation of gage zero 860.13 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rocks. Control is at a riffle about 500 feet downstream from the gage, where bed is rock formation; permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 13.70 feet at 1 a. m. May 1 (discharge, about 39,000 second-feet); minimum, 0.70 foot at 4.45 p. m. October 11 (discharge, 128 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 30,000 second-feet. Chain gage read to hundredths twice daily until August 15, 1928, when automatic gage record began. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Station is maintained in cooperation with the West Penn Power Company, Pittsburgh, Pennsylvania.

Discharge measurements of Youghiogheny River at Connellsville during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
49	Nov. 18	E. E. R. Dornbach	4.21	3,860
50	28	do	6.60	9,210
51	Dec. 8	do	5.44	6,420
52	13	do	7.97	13,600
53	14	do	10.69	24,300
54	Mar. 30	do	5.87	7,360
55	May 1	do	12.90	36,400
56	1	do	11.89	29,700
57	Aug. 15a	do	2.03	939
58	18	S. A. Kowalchik	2.12	975

a Measurement made by wading 1,000 feet upstream from gage.

Daily Mean Gage Height, in feet, of Youghiogheny River at Connellsville for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.88	2.05	4.39	3.58	3.31	3.51	5.45	12.00	2.28	4.85	2.40	2.05
2	.93	1.86	3.98	2.83	2.83	3.26	5.18	8.10	2.34	-------	3.60	1.82
3	1.29	2.30	3.61	2.58	2.76	3.02	4.88	6.20	2.27	-------	3.10	1.46
4	1.44	4.80	3.42	2.83	2.80	2.70	4.33	5.14	2.91	-------	2.63	1.32
5	1.53	5.40	3.17	2.75	3.70	3.07	4.03	4.57	4.45	3.95	2.35	1.64
6	1.28	4.70	3.25	2.93	5.05	3.12	3.84	3.91	4.04	3.65	2.12	1.62
7	1.10	4.15	3.23	2.98	4.20	3.01	3.60	3.60	4.08	3.16	2.38	1.58
8	1.10	3.64	4.90	3.07	5.20	2.96	6.00	3.25	3.92	2.60	2.19	1.55
9	1.18	3.76	4.85	2.95	5.35	3.70	4.80	3.04	3.97	2.05	1.78	1.47
10	1.26	4.14	3.91	3.15	4.71	5.70	4.14	3.86	4.40	2.48	1.95	1.24
11	.79	4.80	4.35	3.15	4.36	4.90	4.00	2.55	4.11	2.98	2.24	1.20
12	1.10	4.95	7.60	2.97	3.96	4.48	6.10	3.04	3.64	3.11	2.31	1.38
13	2.90	4.03	8.95	3.01	3.51	4.90	5.62	2.69	3.43	4.05	1.66	1.41
14	2.65	3.65	10.30	2.78	4.28	5.41	5.05	2.52	3.15	6.90	1.87	1.38
15	1.87	3.49	7.90	2.50	6.10	5.03	4.92	2.31	3.08	4.90	1.97	1.38
16	1.61	3.21	6.25	2.34	5.27	4.42	4.34	2.33	2.71	3.85	1.88	1.60
17	1.49	3.24	5.55	2.45	4.65	4.09	3.93	2.28	2.34	3.43	1.88	1.37
18	3.00	4.15	4.59	3.03	-------	3.90	3.71	2.23	2.28	3.05	2.06	1.41
19	9.00	3.78	4.01	3.20	-------	3.17	3.39	2.31	2.16	2.75	2.01	1.46
20	12.30	3.38	3.79	5.30	3.48	3.43	2.99	2.34	4.61	2.62	1.62	1.84
21	8.60	3.01	3.63	4.50	3.24	3.63	3.14	2.67	4.11	3.16	1.72	2.19
22	5.85	3.12	3.57	3.75	3.23	4.00	4.20	2.75	4.46	2.94	2.00	2.00
23	4.90	3.03	3.46	3.55	3.70	7.70	4.78	2.43	4.16	3.40	2.09	1.70
24	3.75	2.96	3.08	3.70	5.55	7.62	6.15	2.31	5.11	3.90	2.00	1.40
25	3.44	2.94	2.81	5.05	5.00	6.90	6.12	2.26	5.08	3.05	2.09	1.23
26	2.77	3.01	2.66	4.70	4.00	6.12	5.17	2.28	4.39	2.66	2.25	1.42
27	2.66	3.35	2.46	3.92	3.46	5.33	4.66	2.30	3.97	2.41	1.78	1.41
28	2.50	5.65	3.08	3.75	3.70	4.76	4.55	2.25	3.49	2.54	1.94	1.42
29	2.27	5.90	3.00	-------	3.54	4.36	4.85	2.20	3.72	2.62	2.00	1.42
30	2.22	4.80	3.55	3.80	-------	5.90	10.30	2.11	3.90	2.04	1.87	1.44
31	2.05	-------	3.83	3.36	-------	6.80	-------	2.39	-------	1.96	1.96	-------

NOTE—Stage-discharge relation Jan. 4-8, Jan. 28 to Feb. 3, Feb. 20 and 21 affected by ice. Gage height Jan. 29, Feb. 18, 19 and July 2-3 not observed.

Daily discharge, in second-feet, of Youghiogheny River at Connellsville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	192	975	4,190	2,850	1,500	2,700	6,240	30,000	1,200	4,960	1,300	975
2	214	800	3,490	1,740	1,500	2,400	5,800	13,900	1,250	3,800	2,850	760
3	410	1,200	2,850	1,510	1,500	1,990	5,170	8,190	1,160	3,400	2,120	505
4	505	4,960	2,550	1,500	1,740	1,620	4,010	5,590	1,860	2,800	1,510	410
5	575	6,240	2,260	1,500	3,000	2,120	3,490	4,560	4,190	3,490	1,250	645
6	410	4,760	2,260	1,500	5,380	2,120	3,160	3,320	3,490	2,850	1,020	610
7	295	3,830	2,260	1,600	3,830	1,990	2,850	2,850	3,660	2,260	1,300	610
8	295	2,850	5,170	1,700	5,800	1,990	7,680	2,260	3,320	1,510	1,110	575
9	350	3,160	4,960	1,990	6,240	3,000	4,960	1,990	3,490	975	760	505
10	380	3,660	3,320	2,260	4,760	6,950	3,660	3,320	4,190	1,400	885	380
11	158	4,960	4,190	2,260	4,190	5,170	3,490	1,510	3,660	1,990	1,160	350
12	295	5,380	12,200	1,990	3,490	4,370	7,930	1,990	2,850	2,120	1,200	470
13	1,860	3,490	17,200	1,990	2,700	5,170	6,710	1,620	2,550	3,490	645	470
14	1,510	2,850	22,600	1,740	4,010	6,240	5,380	1,400	2,260	10,100	800	470
15	800	2,700	13,200	1,400	7,930	5,380	5,170	1,200	2,120	5,170	885	470
16	610	2,260	8,190	1,250	6,020	4,190	4,010	1,250	1,620	3,160	840	610
17	540	2,260	6,710	1,350	4,560	3,660	3,490	1,200	1,250	2,550	840	440
18	1,990	3,830	4,560	1,990	3,400	3,320	3,000	1,160	1,200	1,990	975	470
19	17,200	3,160	3,490	2,260	2,800	2,260	2,550	1,200	1,060	1,740	930	505
20	31,600	2,550	3,160	6,020	2,200	2,550	1,990	1,250	4,560	1,510	610	800
21	15,700	1,990	2,850	4,370	2,200	2,850	2,120	1,620	3,660	2,260	680	1,110
22	7,190	2,120	2,850	3,160	2,260	3,490	3,830	1,740	4,370	1,860	930	930
23	5,170	1,990	2,700	2,850	3,000	12,500	4,960	1,350	3,830	2,550	1,020	680
24	3,160	1,990	2,120	3,000	6,710	12,200	8,190	1,200	5,590	3,320	930	470
25	2,550	1,860	1,740	5,380	5,380	10,100	7,930	1,160	5,590	1,990	1,020	380
26	1,740	1,990	1,620	4,760	3,490	7,930	5,800	1,200	4,190	1,620	1,160	470
27	1,620	2,550	1,350	3,320	2,700	6,020	4,760	1,200	3,490	1,300	760	470
28	1,400	6,710	2,120	2,200	3,000	4,960	4,560	1,160	2,700	1,400	885	470
29	1,160	7,430	1,990	1,700	2,700	4,190	4,960	1,110	3,000	1,510	930	470
30	1,110	4,960	2,850	1,500	-------	7,430	22,600	1,020	3,320	975	800	505
31	975	-------	3,160	1,500	-------	9,800	-------	1,300	-------	885	885	-------

NOTE—Discharge estimated Jan. 4-8, Jan. 28 to Feb. 3, Feb. 20 and 21, because of ice and Jan. 29, Feb. 18, 19 and July 2-4, because of no gage height record, from weather records, study of gage height graph and comparison with similar studies for Youghiogheny River at Friendsvile and Casselman River at Markleton.

Monthly discharge of Youghiogheny River at Connellsville, for the year ending Sept. 30, 1928

(Drainage area 1,320 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	31,600	158	3,290	2.49	2.87
November	7,430	800	3,320	2.52	2.81
December	22,600	1,350	4,970	3.77	4.35
January	6,020	1,250	2,390	1.81	2.09
February	7,930	1,500	3,720	2.82	3.04
March	12,500	1,620	4,860	3.68	4.24
April	22,600	1,890	5,350	4.05	4.52
May	30,000	1,020	3,350	2.54	2.93
June	5,590	1,060	3,020	2.29	2.56
July	10,100	885	2,610	1.98	2.28
August	2,850	610	1,060	.803	.93
September	1,110	350	566	.429	.48
The Year	31,600	158	3,210	2.43	33.10

OHIO BASIN—STATION NO. 25

YOUGHIOGHENY RIVER AT SUTERSVILLE

Location.—At three-span steel highway bridge, Sutersville, Westmoreland County.

Drainage Area.—1,680 square miles.

Records Available.—June 11, 1915, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by George E. Smeltzer. Elevation of gage zero 733.14 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge.

Channel and Control.—Right bank is low and subject to overflow; left is high and does not overflow. Bed is composed of shifting sand and gravel overlaying a rocky bed. Control is at a riffle about 400 feet downstream from the gage at right side of stream; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 18.50 feet at 1 p. m. October 20 (discharge, about 45,000 second-feet); minimum, 2.46 feet at 4 p. m. October 1 (discharge, 238 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh, Pennsylvania.

Discharge measurements of Youghiogheny River at Sutersville during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
22	June 6	Geo. Weber	5.97	4,760
23	Aug. 18	S. A. Kowalchik	3.44	1,020

Daily Mean Gage Height, in feet, of Youghiogheny River at Sutersville, for the year ending Sept 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.53	3.60	6.49	6.01	7.36	5.13	7.44	15.80	3.83	5.75	3.50	3.40
2	2.58	3.52	6.12	4.84	6.96	5.03	6.99	10.94	3.83	5.65	4.40	3.48
3	2.59	4.95	5.85	5.34	6.58	4.75	6.69	8.19	3.93	5.35	4.88	3.26
4	2.88	8.25	5.49	5.96	6.76	4.47	6.14	6.89	4.08	5.00	4.08	2.83
5	2.93	7.68	5.22	5.88	9.21	4.63	5.79	6.14	5.88	6.70	3.88	2.87
6	2.85	6.80	5.07	6.01	8.81	4.67	5.59	5.76	5.92	6.22	3.72	3.14
7	2.67	6.15	4.97	5.96	6.31	4.43	5.49	5.36	5.65	5.30	3.58	3.05
8	2.61	5.70	5.67	5.56	5.91	4.47	7.54	5.06	5.58	4.42	3.75	3.00
9	2.70	5.58	6.77	5.34	6.84	4.85	6.64	4.79	5.60	4.32	3.62	2.95
10	2.74	5.52	5.82	5.14	6.91	7.00	5.86	4.59	6.10	5.38	3.50	2.90
11	2.75	6.28	5.69	4.91	6.21	6.53	5.62	4.44	6.00	4.88	3.55	2.78
12	2.62	6.55	8.17	4.76	5.68	6.05	7.09	4.44	5.45	4.88	3.48	2.70
13	3.80	6.02	11.02	4.76	5.36	6.35	7.26	4.44	5.12	5.48	3.50	2.77
14	4.50	5.62	13.52	4.56	5.40	6.50	6.74	4.19	4.82	10.30	3.05	2.92
15	3.70	5.25	11.07	4.38	7.35	6.60	6.64	3.89	4.60	7.45	3.32	2.89
16	3.65	4.99	8.52	4.08	7.50	6.03	6.02	3.83	4.25	5.88	3.50	2.97
17	3.26	5.17	7.72	3.91	6.55	5.75	5.74	3.83	3.92	5.25	3.35	3.02
18	3.80	6.07	6.75	4.31	6.20	5.57	5.44	3.85	3.80	4.78	3.46	2.79
19	11.10	5.89	6.09	4.68	5.90	5.83	5.19	3.93	4.00	4.55	3.45	2.87
20	17.40	5.22	5.67	6.28	5.30	5.13	4.89	4.15	5.75	4.40	3.42	3.10
21	13.10	4.95	5.62	6.36	5.15	5.37	4.74	4.13	5.80	4.50	2.97	3.45
22	8.08	4.77	5.42	5.71	4.70	5.77	5.49	4.41	6.60	4.52	3.42	3.42
23	6.50	4.75	5.25	7.61	5.93	7.17	6.84	4.08	5.75	5.05	3.55	3.32
24	5.55	4.67	4.89	8.86	7.70	9.00	7.72	3.85	6.45	5.55	3.60	3.02
25	5.28	4.65	4.65	7.86	7.25	8.57	8.04	3.73	7.05	4.92	3.62	2.85
26	4.65	4.72	4.37	6.61	6.05	7.80	7.19	3.73	6.18	4.35	3.72	2.80
27	4.42	4.77	4.37	5.84	5.45	7.33	6.46	3.81	5.70	4.15	3.55	2.87
28	4.12	7.67	4.17	5.46	5.43	6.47	6.94	3.83	5.22	3.98	3.06	2.90
29	3.95	8.59	4.56	7.46	5.20	6.05	7.14	3.73	5.08	4.05	3.38	2.87
30	3.68	7.07	5.24	7.08	-------	7.97	10.99	3.68	5.95	3.80	3.44	3.32
31	3.92	-------	5.74	7.16	-------	9.24	-------	3.71	-------	3.50	3.48	-------

NOTE—Stage-discharge relation Jan. 3-10 and Jan. 29 to Feb. 6 affected by ice.

Daily discharge, in second-feet, of Youghiogheny River at Sutersville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	276	1,150	5,800	4,800	1,900	3,090	7,600	33,500	1,420	4,400	1,050	950
2	304	1,050	5,000	2,620	2,000	2,930	6,800	16,700	1,420	4,000	2,060	1,050
3	310	2,930	4,400	1,800	2,400	2,620	6,200	9,500	1,520	3,610	2,770	805
4	500	9,500	3,800	1,800	3,600	2,190	5,000	6,600	1,690	2,930	1,690	462
5	538	8,300	3,260	1,800	6,000	2,330	4,400	5,000	4,600	6,200	1,470	492
6	478	6,400	3,090	1,900	7,000	2,470	4,000	4,400	4,600	5,200	1,250	715
7	357	5,200	2,930	2,000	5,400	2,060	3,800	3,610	4,000	3,430	1,150	630
8	321	4,200	4,200	2,400	4,600	2,190	7,900	3,090	4,000	2,060	1,300	590
9	375	4,000	6,400	2,400	6,400	2,620	6,000	2,620	4,000	1,930	1,150	552
10	401	3,800	4,400	2,600	6,600	6,800	4,600	2,330	5,000	3,610	1,050	515
11	408	5,400	4,200	2,770	5,200	5,800	4,000	2,060	4,800	2,770	1,100	427
12	327	6,000	9,500	2,620	4,200	4,800	7,000	2,060	3,610	2,770	1,050	375
13	1,360	4,800	16,900	2,620	3,610	5,600	7,400	2,060	3,090	3,800	1,050	420
14	2,190	4,000	24,800	2,330	3,610	5,800	6,200	1,810	2,620	14,900	630	530
15	1,250	3,260	17,300	2,060	7,600	6,000	6,000	1,470	2,330	7,600	850	508
16	1,200	2,930	10,200	1,690	7,900	4,800	4,800	1,420	1,810	4,600	1,050	568
17	805	3,260	8,300	1,470	6,000	4,400	4,200	1,420	1,470	3,260	900	590
18	1,360	5,000	6,400	1,930	5,200	4,000	3,610	1,420	1,360	2,620	1,000	434
19	17,300	4,600	5,000	2,470	4,600	4,400	3,260	1,520	1,580	2,330	1,000	492
20	40,200	3,260	4,200	5,400	3,430	3,090	2,770	1,810	4,400	2,060	950	670
21	23,400	2,930	4,000	5,600	3,260	3,610	2,470	1,690	4,400	2,190	568	1,000
22	9,300	2,620	3,610	4,200	2,470	4,400	3,800	2,060	6,000	2,190	950	950
23	5,800	2,620	3,260	8,100	4,600	7,200	6,400	1,690	4,400	2,930	1,100	850
24	4,000	2,470	2,770	11,200	8,300	11,400	8,300	1,420	5,600	4,000	1,150	590
25	3,430	2,330	2,330	8,800	7,200	10,400	9,000	1,300	6,800	2,770	1,150	478
26	2,330	2,470	2,060	6,000	4,800	8,500	7,200	1,300	5,200	2,060	1,250	440
27	2,660	2,620	2,060	4,400	3,610	7,400	5,800	1,300	4,200	1,810	1,100	492
28	1,690	8,300	1,810	3,800	3,610	5,800	6,600	1,420	3,260	1,580	630	515
29	1,520	10,400	2,330	2,600	3,260	4,800	7,000	1,300	3,090	1,580	950	492
30	1,250	7,000	3,260	2,000	-------	9,000	16,900	1,250	4,800	1,360	1,000	850
31	1,470	-------	4,200	2,000	-------	11,900	-------	1,250	-------	1,050	1,050	-------

NOTE—Discharge Jan. 3-10 and Jan. 29 to Feb. 6 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Casselman River at Markleton and Youghiogheny River at Connellsville.

Monthly discharge of Youghiogheny River at Sutersville, for the year ending Sept. 30, 1928
(Drainage area 1,680 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	40,200	276	4,080	2.43	2.80
November	10,400	1,050	4,430	2.64	2.94
December	24,800	1,810	5,860	3.49	4.02
January	11,200	1,470	3,490	2.08	2.40
February	8,300	1,900	4,770	2.84	3.06
March	11,900	2,060	5,240	3.12	3.60
April	16,900	2,470	5,970	3.55	3.96
May	33,500	1,250	3,890	2.32	2.68
June	6,800	1,360	3,570	2.12	2.36
July	14,900	1,050	3,470	2.07	2.39
August	2,770	568	1,140	.679	.78
September	1,050	375	614	.365	.41
The Year	40,200	276	3,870	2.30	31.40

OHIO BASIN—STATION NO. 26

TURTLE CREEK NEAR TRAFFORD

Location.—At single-span highway bridge, Blackburn Station, Pennsylvania Railroad, about one and a quarter miles northeast of Trafford, Westmoreland County.

Drainage Area.—55 square miles.

Records Available.—July 28, 1914, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by E. G. Perks.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of hardpan and gravel; not subject to change. Control is at a riffle about 50 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.40 feet at 1.30 p. m. July 5 (discharge, about 3,600 second-feet); minimum, 0.56 foot from 9 a. m. August 27 to 8 a. m. August 28 (discharge 5.5 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 300 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages and estimated periods, when they are fair.

Discharge measurements of Turtle Creek near Trafford during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
31	Aug. 20	S. A. Kowalchik	0.64	8.96

Measurement made by wading 200 feet upstream from gage.

Daily Mean Gage Height, in feet, of Turtle Creek near Trafford, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	0.85	1.95	-------	1.41	1.36	1.88	1.91	0.88	2.12	-------	0.61
2	-------	.85	1.90	-------	1.33	1.30	1.81	1.65	.86	2.05	-------	-------
3	-------	1.65	1.81	-------	1.30	1.21	1.74	1.52	.86	1.91	-------	-------
4	-------	1.75	1.58	-------	1.34	1.28	1.68	1.45	1.80	2.00	-------	-------
5	-------	1.76	1.47	-------	2.05	1.31	1.58	1.35	2.14	4.00	-------	-------
6	-------	1.65	1.40	-------	1.91	1.33	1.48	1.24	2.53	2.25	-------	-------
7	-------	1.47	1.36	-------	1.75	1.23	1.63	1.19	1.88	1.71	-------	-------
8	-------	1.34	1.27	-------	1.69	1.18	2.01	1.17	1.57	1.58	-------	-------
9	-------	1.26	1.24	-------	1.68	1.60	1.66	1.13	2.37	1.41	-------	-------
10	-------	1.16	1.24	-------	1.70	1.71	1.54	1.11	2.35	1.78	-------	-------
11	-------	1.13	1.50	-------	1.70	1.47	1.65	1.16	1.60	1.59	-------	-------
12	-------	1.11	2.30	-------	1.68	1.41	1.90	1.06	1.46	1.50	-------	-------
13	-------	1.08	2.90	-------	1.67	1.43	1.60	1.01	1.34	3.60	-------	-------
14	-------	1.07	-------	-------	1.83	1.70	1.69	.98	1.34	-------	-------	-------
15	-------	1.08	2.55	1.16	2.35	1.49	1.61	.98	1.16	1.79	-------	-------
16	-------	.95	3.50	1.15	2.14	1.43	1.47	.98	1.13	1.49	-------	-------
17	-------	2.10	2.56	1.14	1.99	1.38	1.37	.98	1.09	1.34	-------	-------
18	-------	2.10	-------	1.10	1.85	1.42	1.32	.98	2.29	1.25	-------	-------
19	-------	1.62	-------	1.15	1.68	1.37	1.25	1.01	1.98	1.25	-------	-------
20	-------	1.46	-------	1.35	1.54	1.41	1.22	.98	1.53	1.17	.62	-------
21	-------	1.57	1.39	-------	1.48	1.50	1.40	-------	.97	1.63	1.11	.61
22	-------	1.41	1.35	-------	1.51	1.50	1.75	-------	.93	2.78	-------	.76
23	-------	1.27	1.30	-------	1.37	2.40	1.74	-------	.92	2.10	-------	.64
24	-------	1.13	-------	-------	1.30	3.15	1.62	-------	.95	2.60	-------	.61
25	-------	1.04	-------	-------	1.62	2.01	1.52	-------	.95	2.48	-------	.65
26	-------	1.00	-------	-------	1.41	1.73	1.80	-------	.91	-------	-------	-------
27	-------	.98	-------	-------	1.37	1.54	1.75	-------	.90	2.07	-------	.56
28	-------	.94	-------	-------	1.35	1.44	1.59	-------	.90	2.00	-------	.57
29	-------	.91	2.20	-------	1.36	1.40	1.54	3.70	.88	2.40	-------	.58
30	-------	.90	2.10	-------	1.41	-------	3.88	2.31	.89	2.23	-------	.58
31	-------	.87	-------	-------	1.44	-------	2.25	-------	.91	-------	-------	.71

NOTE—Gage height not observed on days of no record. Stage-discharge relation Jan. 19 to Feb. 4 affected by ice.

Daily discharge, in second-feet, of Turtle Creek near Trafford, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6	16	258	100	40	81	229	241	19	323	22	6.5
2	6	16	237	70	40	70	203	150	17	301	14	6
3	6	150	203	55	46	56	179	115	17	241	11	8
4	13	182	130	50	60	67	159	99	199	279	11	6
5	24	185	103	48	301	72	130	79	346	1,490	60	6
6	22	150	88	50	241	75	106	60	546	393	48	8
7	13	103	81	55	182	59	144	53	229	168	30	7
8	11	77	65	65	162	51	279	50	128	130	19	7
9	11	64	60	70	159	135	153	45	442	90	12	6
10	10	49	60	65	165	168	120	42	442	192	9	8
11	10	45	110	60	165	103	150	49	135	132	8	7
12	34	42	417	60	159	90	237	36	101	110	8	6
13	85	39	747	55	156	95	135	30	77	1,210	8	6
14	48	37	1,400	50	210	165	162	27	77	850	11	8
15	30	33	546	49	442	108	138	27	49	196	34	8
16	20	24	1,140	48	346	95	103	27	45	108	48	10
17	16	323	546	46	275	84	83	27	40	77	30	10
18	400	323	400	41	218	92	74	27	417	62	13	8
19	2,200	141	240	40	159	83	62	30	271	62	8	8
20	1,200	101	160	48	120	90	57	27	118	50	6.8	9
21	128	86	140	60	110	88	55	26	144	42	6.5	7
22	90	79	100	65	110	182	80	23	687	40	11	6
23	65	70	80	60	467	179	280	22	323	44	7.2	7
24	45	65	60	60	939	141	440	24	573	42	6.5	8
25	34	60	50	55	279	115	280	24	519	36	7.5	9
26	29	65	48	50	175	199	180	21	420	34	6.0	8
27	27	320	40	50	120	182	160	20	301	30	5.5	8
28	24	1,400	40	48	97	132	650	20	279	34	5.7	8
29	21	369	48	46	88	120	1,280	19	467	28	5.9	8
30	20	323	100	44	-------	1,420	417	19	393	24	5.9	8
31	18	-------	110	42	-------	393	-------	21	-------	22	9.4	-------

NOTE—Discharge estimated Oct. 1-20, Nov. 24-28, Dec. 14, Dec. 18 to Jan. 14, Apr. 21-28, June 26, July 14, July 22 to Aug. 19, Aug. 26 and Sept. 2-30, because of no gage height record, and Jan. 19 to Feb. 4, because of ice, from weather records, study of gage height graph and discharge of Loyalhanna Creek at New Alexandria.

Monthly discharge of Turtle Creek near Trafford, for the year ending Sept. 30, 1928

(Drainage area 55 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	2,200	6	151	2.75	3.17
November	1,400	16	165	3.00	3.35
December	1,400	40	252	4.58	5.28
January	100	40	55.0	1.00	1.15
February	939	40	208	3.78	4.08
March	1,420	51	161	2.93	3.38
April	1,280	55	224	4.07	4.54
May	241	19	47.7	.867	1.00
June	687	17	261	4.75	5.30
July	1,490	22	221	4.02	4.64
August	60	5.5	15.7	.285	.33
September	10	6	7.52	.137	.15
The Year	2,200	5.5	147	2.67	36.37

OHIO BASIN—STATION NO. 27

CHARTIERS CREEK AT CARNEGIE

Location.—At single-span steel railroad bridge, known as Freight House Bridge, siding of the Chartiers Branch, Pennsylvania Railroad, Carnegie, Allegheny County.

Drainage Area.—260 square miles.

Records Available.—June 6, 1915, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by F. J. Wenger.

Discharge Measurements.—Made from downstream side of bridge, upstream side of Branch Line Bridge about 100 feet upstream from the gage, or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of mud and slag over a rocky floor. Control is at the first of a series of riffles about 600 feet downstream from the gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, 12.22 feet observed at 7 a. m. June 22 (discharge, 9,420 second-feet); mimimum estimated, 1.41 feet on October 1 (discharge, 17 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined to 100 second-feet and fairly well defined from 100 to 1,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh, Pennsylvania.

Discharge measurements of Chartiers Creek at Carnegie during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
24	Aug. 15	S. A. Kowalchik	2.28	86.3

Measurement made by wading 800 feet upstream from gage.

Daily Mean Gage Height, in feet, of Chartiers Creek at Carnegie, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	1.95	5.81	3.22	2.64	3.45	5.10	5.10	2.46	3.96	3.22	2.50
2	1.42	1.87	4.89	3.00	2.84	3.50	5.45	4.38	2.72	3.55	3.34	2.14
3	1.56	2.64	4.53	3.38	2.68	3.30	4.70	4.09	2.34	3.38	2.92	2.07
4	1.84	3.05	4.11	3.22	3.25	3.40	4.38	3.68	3.22	3.26	3.30	2.01
5	1.63	3.47	3.92	2.92	4.55	3.22	4.64	3.60	3.60	6.90	2.76	2.00
6	1.54	-------	3.72	2.88	3.72	3.18	4.18	3.22	4.60	5.80	2.72	2.01
7	1.46	-------	3.52	3.10	3.30	3.26	3.92	3.55	3.84	4.05	2.63	2.12
8	1.78	-------	3.43	3.26	5.10	3.10	4.42	3.42	3.45	3.59	2.42	2.06
9	1.62	-------	3.33	3.46	5.60	3.55	3.60	3.34	5.45	3.38	2.64	1.98
10	1.50	-------	3.28	3.14	4.72	4.35	3.72	3.18	4.96	3.13	2.34	1.94
11	1.46	2.47	3.64	2.84	4.30	3.64	3.40	3.14	4.18	3.13	2.64	1.90
12	2.26	2.41	5.16	2.68	3.68	3.46	4.22	3.26	3.68	4.25	2.55	1.94
13	2.72	2.34	5.73	2.46	3.64	3.35	3.72	3.14	3.42	7.35	2.38	2.06
14	2.10	2.37	8.52	2.72	4.05	4.50	3.42	2.72	3.30	9.20	2.38	2.01
15	1.83	2.34	5.68	2.76	7.00	3.88	3.72	2.42	3.34	5.65	2.38	1.99
16	1.71	2.35	8.73	2.84	5.50	3.75	3.42	2.64	3.09	4.38	2.24	1.94
17	1.63	7.40	6.59	2.76	4.68	3.34	3.55	2.68	2.68	3.97	2.36	1.90
18	2.51	6.29	5.16	2.72	4.26	3.72	3.42	2.96	3.14	3.63	2.42	1.86
19	4.36	4.54	4.56	2.92	4.22	3.64	3.05	3.18	3.34	3.72	2.26	1.98
20	4.96	3.91	4.23	3.70	3.92	3.60	3.18	4.20	2.88	5.70	2.18	2.42
21	3.67	3.76	4.09	2.72	3.59	4.50	3.22	3.30	3.60	7.30	2.15	2.29
22	2.85	3.65	3.88	3.18	3.42	5.20	5.05	2.76	9.72	4.76	2.46	2.08
23	2.62	3.50	3.75	3.30	4.90	4.64	5.64	2.72	5.95	4.42	2.35	1.89
24	2.43	3.56	3.61	3.72	5.80	4.22	5.18	2.55	4.20	4.22	2.25	1.86
25	2.29	3.40	3.39	4.64	4.80	3.92	4.80	2.72	4.22	3.72	2.19	1.96
26	2.19	3.35	3.26	4.18	4.18	4.80	4.38	2.80	3.72	3.52	2.14	1.88
27	2.10	3.64	3.16	3.30	3.72	5.40	4.09	2.55	3.30	3.50	2.09	1.86
28	2.04	6.54	3.15	2.84	3.55	4.22	5.05	2.46	3.30	3.68	2.11	1.83
29	2.00	5.64	3.41	2.55	3.64	3.72	6.25	2.55	4.50	3.26	2.07	1.79
30	1.97	5.64	3.59	2.92	-------	9.08	6.30	2.46	4.50	3.14	2.25	1.82
31	1.95	-------	3.56	2.88	-------	6.30	-------	2.55	-------	3.14	3.35	-------

NOTE—Gage height Oct. 1 and Nov. 6-10 not observed. Stage-discharge relation Jan. 2-5 and Jan. 30 to Feb. 2 affected by ice.

Daily discharge, in second-feet, of Chartiers Creek at Carnegie, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	53	1,590	290	110	378	1,140	1,140	119	585	290	125
2	18	45	1,040	220	120	397	1,340	793	161	417	341	74
3	24	152	842	190	161	323	944	652	100	359	206	66
4	43	246	652	180	306	359	793	478	290	306	323	59
5	28	378	563	190	892	290	892	437	437	2,470	172	58
6	23	400	478	206	478	290	698	290	892	1,590	161	59
7	19	320	397	260	323	306	563	417	542	607	152	71
8	38	260	378	306	1,140	260	793	359	378	437	112	65
9	27	200	341	378	1,470	417	437	341	1,340	359	152	56
10	21	160	323	275	944	793	478	290	1,080	275	100	52
11	19	120	458	194	745	458	359	275	698	275	152	48
12	89	111	1,200	161	478	378	698	306	478	698	134	52
13	161	100	1,520	119	458	341	478	275	359	2,930	106	65
14	69	104	4,120	161	607	842	359	161	323	4,960	106	59
15	42	100	1,520	172	2,560	563	478	112	341	1,470	106	57
16	33	102	4,360	194	1,390	499	359	152	260	793	86	52
17	28	2,930	2,200	172	944	341	417	161	161	585	103	48
18	125	1,960	1,200	161	745	478	359	219	275	458	112	44
19	793	842	892	206	698	458	246	290	341	478	89	56
20	1,080	563	698	478	563	437	290	698	206	1,520	79	112
21	458	499	652	161	437	842	290	323	437	2,820	75	93
22	194	458	563	290	359	1,200	1,080	172	5,600	1,000	119	67
23	142	397	499	323	1,040	892	1,470	161	1,740	793	102	47
24	114	417	437	478	1,590	698	1,200	134	698	698	88	44
25	93	359	359	892	1,000	563	1,000	161	698	478	80	54
26	80	341	306	698	698	1,000	793	182	478	397	74	46
27	69	458	275	323	478	1,340	652	134	323	397	68	44
28	62	2,120	275	194	417	698	1,080	119	323	478	70	42
29	58	1,470	359	134	458	478	1,880	134	842	306	66	38
30	55	1,470	437	120	-------	4,820	1,960	119	842	275	88	41
31	53	-------	417	110	-------	1,960	-------	134	-------	275	341	-------

NOTE—Discharge estimated Oct. 1 and Nov. 6-10, because of no gage height record, and Jan. 2-5 and Jan. 30 to Feb. 2, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River at Sharon and Slippery Rock Creek at Wurtemburg.

Monthly discharge of Chartiers Creek at Carnegie, for the year ending Sept. 30, 1928

(Drainage area 260 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,080	17	131	0.504	0.58
November	2,930	45	571	2.20	2.46
December	4,360	275	947	3.64	4.20
January	892	110	266	1.02	1.18
February	2,560	110	745	2.87	3.10
March	4,820	260	745	2.87	3.31
April	1,960	246	784	3.02	3.37
May	1,140	112	310	1.19	1.37
June	5,600	100	692	2.66	2.97
July	4,960	275	951	3.66	4.22
August	341	66	137	.527	.61
September	125	38	59.8	.230	.26
The Year	5,600	17	527	2.03	27.63

OHIO BASIN—STATION NO. 28

SHENANGO RIVER NEAR JAMESTOWN

Location.—At two-span steel highway bridge, known as Frye Bridge, about one and one-half miles downstream from Jamestown, Mercer County.

Drainage Area.—182 square miles.

Records Available.—December 2, 1919, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by Hugh P. McClimans. Elevation of gage zero 955.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is low and overflow begins at a stage of 7 feet; left is high and not subject to overflow. Bed is composed of gravel and boulders. Control is at a riffle about 50 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 8.00 feet at 4 a. m. December 1 (discharge, 2,330 second-feet); minimum, 1.12 feet at 8 a. m. September 19 (discharge, 3.5 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 1,600 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Shenango River near Jamestown during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
36	Aug. 29	S. A. Kowalchik	1.37	13.9

Measurement made by wading 10 feet upstream from gage.

Daily Mean Gage Height, in feet, of Shenango River near Jamestown for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.29	1.41	7.43	6.91	3.54	2.21	4.29	2.28	1.54	-------	1.71	1.32
2	1.31	1.39	7.47	5.51	3.29	2.13	3.83	2.16	1.52	-------	1.68	1.32
3	1.33	1.41	6.91	5.40	2.92	2.06	3.40	1.99	1.52	-------	1.65	1.30
4	1.42	1.46	5.15	5.06	2.76	2.06	3.11	1.93	1.61	-------	1.59	1.29
5	1.40	1.51	3.75	4.41	4.96	2.18	2.84	1.88	1.97	2.08	1.59	1.30
6	1.41	1.63	3.22	3.76	4.38	2.10	2.63	1.82	5.93	2.00	1.86	1.28
7	1.42	1.68	2.95	3.48	4.34	1.88	2.49	1.80	5.29	1.94	1.82	1.28
8	1.35	1.73	2.80	3.28	5.78	1.89	2.44	1.73	5.39	1.87	1.80	1.31
9	1.35	1.75	3.17	3.26	6.28	1.88	2.39	1.68	5.39	2.05	1.74	1.33
10	1.33	1.71	3.25	3.38	5.68	1.84	2.39	1.62	5.05	1.98	1.63	1.31
11	1.32	1.70	2.59	3.50	4.91	2.13	2.38	1.58	4.07	1.99	2.10	1.31
12	1.39	1.63	2.55	3.38	4.06	2.04	2.45	1.55	3.42	1.84	1.74	1.29
13	1.43	1.60	3.37	3.27	3.76	2.33	2.45	1.52	3.08	2.30	1.70	1.28
14	1.56	1.59	5.93	3.18	3.61	3.55	2.51	1.52	2.83	2.36	1.64	1.26
15	1.61	1.55	6.57	3.08	4.46	4.17	2.57	1.47	2.40	2.04	1.56	1.27
16	1.63	1.61	6.92	2.98	4.77	4.48	2.43	1.46	2.14	1.94	1.47	1.23
17	1.57	1.87	5.95	2.91	4.67	3.42	2.41	1.52	2.03	1.95	1.42	1.21
18	1.57	2.69	5.25	2.70	4.07	2.97	2.39	2.01	2.43	1.91	1.41	1.17
19	1.52	2.71	4.67	2.86	3.60	2.67	2.30	2.49	2.48	2.04	1.38	1.15
20	1.47	2.70	4.45	2.83	2.93	2.52	2.07	2.12	2.14	2.02	1.38	1.23
21	1.44	2.66	3.87	2.67	2.77	2.55	2.11	2.02	2.08	1.92	1.39	1.29
22	1.46	2.63	3.49	2.81	2.64	2.66	3.37	1.97	2.05	1.88	1.42	1.35
23	1.52	2.56	3.15	3.01	2.92	2.62	3.39	1.97	2.07	1.87	1.40	1.33
24	1.47	2.47	2.86	3.00	3.17	2.62	3.89	1.91	-------	1.78	1.41	1.30
25	1.44	2.42	2.80	3.48	2.95	2.66	3.69	1.82	-------	1.71	1.35	1.28
26	1.44	2.85	2.73	3.41	3.10	2.75	3.20	1.70	-------	1.95	1.41	1.31
27	1.42	3.55	2.67	3.38	2.87	3.01	2.75	1.64	-------	2.96	1.44	1.29
28	1.40	3.75	2.54	3.44	2.58	2.81	2.51	1.59	-------	2.41	1.41	1.30
29	1.41	3.79	3.92	3.61	2.38	2.74	2.36	1.54	-------	2.10	1.36	1.31
30	1.41	5.11	4.51	3.77	-------	4.93	2.35	1.55	-------	1.82	1.34	1.29
31	1.37	-------	6.27	3.68	-------	4.35	-------	1.59	-------	1.70	1.33	-------

NOTE—Stage-discharge relation Dec. 9, 10, 26, 27, Jan. 22, 23, Jan. 27 to Feb. 7, Feb. 26, 27, Mar. 5, 6 and 16 affected by ice. Gage height June 24 to July 4 not observed.

Daily discharge, in second-feet of Shenango River near Jamestown, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.6	19	2,030	1,780	260	148	745	169	32	220	56	12
2	11	17	2,080	1,200	220	138	570	138	30	150	51	12
3	12	19	1,780	1,160	220	117	450	105	30	120	47	10
4	20	23	1,080	1,040	200	117	360	94	41	120	39	9.6
5	18	28	570	780	700	110	292	84	101	127	39	10
6	19	44	390	570	700	100	246	74	1,360	110	81	9.0
7	20	51	317	480	650	84	213	70	1,120	96	74	9.0
8	14	59	280	420	1,320	86	202	59	1,160	83	70	11
9	14	62	260	420	1,520	84	191	51	1,160	117	60	12
10	12	56	240	450	1,280	77	191	43	1,000	103	44	11
11	12	54	235	480	960	138	191	37	675	105	127	11
12	17	44	224	450	675	117	202	34	450	77	60	9.6
13	21	40	450	420	570	180	202	30	360	169	54	9.0
14	35	39	1,360	390	510	510	213	30	292	180	46	7.8
15	41	34	1,640	360	815	710	224	24	191	117	35	8.4
16	44	41	1,780	330	920	550	202	23	138	96	24	6.5
17	36	83	1,400	304	885	450	191	30	117	98	20	5.7
18	36	257	1,080	257	675	317	191	107	202	90	19	4.6
19	30	257	885	292	510	246	169	213	213	117	16	4.1
20	24	257	780	292	317	213	117	127	138	107	16	6.5
21	22	246	605	246	268	224	127	107	127	92	17	9.6
22	23	246	480	240	246	246	450	101	117	84	20	14
23	30	224	390	240	304	235	450	101	117	83	18	12
24	24	202	292	330	390	235	605	90	240	67	19	10
25	22	191	280	480	317	246	540	74	200	56	14	9.0
26	22	292	260	450	280	268	390	54	160	98	19	11
27	20	510	240	440	240	330	268	46	150	317	22	9.6
28	18	570	224	400	235	280	213	39	140	191	19	10
29	19	570	605	360	191	268	180	32	140	127	15	11
30	19	1,040	815	340	-------	960	180	34	180	74	13	9.6
31	16	-------	1,520	300	-------	780	-------	39	-------	54	12	-------

NOTE—Discharge estimated Dec. 9, 10, 26, 27, Jan. 22, 23, Jan. 27 to Feb. 7, Feb. 26, 27, Mar. 5, 6 and 16, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River at Sharon, and June 24 to July 4, because of no gage height record, from discharge of Little Shenango River at Greenville.

Monthly discharge of Shenango River near Jamestown, for the year ending Sept. 30, 1928
(Drainage area 182 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	44	9.6	22.0	0.121	0.14
November	1,040	17	186	1.02	1.14
December	2,080	224	793	4.36	5.03
January	1,780	240	506	2.78	3.20
February	1,520	191	565	3.10	3.34
March	960	77	276	1.52	1.75
April	745	117	292	1.60	1.78
May	213	23	72.9	.401	.46
June	1,360	30	346	1.90	2.12
July	317	54	118	.648	.75
August	127	12	37.6	.207	.24
September	14	4.1	9.49	.052	.06
The Year	2,080	4.1	268	1.47	20.01

OHIO BASIN—STATION NO. 29

LITTLE SHENANGO RIVER AT GREENVILLE

Location.—At single-span steel highway bridge, known as Quaker Bridge, Columbia Avenue, Greenville, Mercer County.

Drainage Area.—107 square miles.

Records Available.—January 1, 1914, to August 31, 1923, and November 19, 1925, to September 30, 1928.

Gage.—Vertical staff attached to upstream corner of right abutment; read by Benj. F. Tullar and Charles P. Clarke. Elevation of gage zero 944.50 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of sand and gravel. Control for low stages is a coarse gravel and boulder bar, about 200 feet downstream from gage, permanent; for high stage is a dam on the Shenango River just downstream from the mouth of the Little Shenango River.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 7.05 feet at 5.30 a. m. December 1 (discharge, 3,220

second-feet); minimum, 1.06 feet at 6 p. m. October 31 (discharge, 5.0 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,800 second-feet and fairly well defined between 1,800 and 2,800 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Little Shenango River at Greenville during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
36	Aug. 29	S. A. Kowalchik	1.34	19.8

Measurement made by wading 1,000 feet upstream from gage.

Daily Mean Gage Height, in feet, of Little Shenango River at Greenville for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.11	1.12	6.30	4.08	2.19	1.82	2.48	1.77	1.47	2.15	1.65	1.32
2	1.14	1.16	4.00	2.80	2.15	1.81	2.24	1.69	1.48	1.81	1.62	1.29
3	1.11	1.29	2.73	2.47	1.93	1.79	2.11	1.66	1.45	1.64	1.56	1.29
4	1.30	1.33	2.28	2.60	2.03	1.84	2.35	1.59	1.60	1.53	1.54	1.31
5	1.29	1.50	2.09	2.75	3.65	1.76	2.07	1.57	2.08	2.48	1.51	1.30
6	1.22	1.50	1.99	2.32	3.78	1.73	1.92	1.55	4.48	2.99	2.04	1.28
7	1.16	1.47	1.95	2.10	2.83	1.69	1.85	1.51	4.05	2.19	2.01	1.34
8	1.14	1.39	1.98	2.47	3.96	1.71	2.06	1.48	3.52	1.75	1.69	1.31
9	1.16	1.36	1.90	2.57	4.30	1.71	1.91	1.45	3.03	1.70	1.55	1.28
10	1.11	1.33	2.16	2.33	2.98	1.86	1.79	1.43	3.43	2.20	1.72	1.27
11	1.15	1.31	1.88	2.15	2.53	1.72	1.76	1.40	2.51	1.91	3.65	1.28
12	1.22	1.33	2.17	2.13	2.35	2.06	1.90	1.39	2.14	2.01	2.43	1.26
13	1.59	1.29	3.13	2.11	2.17	2.25	1.86	1.38	1.95	2.40	1.84	1.23
14	1.40	1.22	5.83	2.16	2.68	3.82	1.94	1.36	1.79	3.30	1.68	1.21
15	1.34	1.23	3.72	2.09	3.85	3.00	2.06	1.35	1.71	2.55	1.60	1.20
16	1.26	1.28	3.60	1.93	3.20	2.26	1.83	1.33	1.63	2.03	1.55	1.22
17	1.23	2.47	4.16	2.01	2.71	2.05	1.81	1.45	1.59	1.81	1.47	1.16
18	1.21	3.50	2.86	1.93	2.50	1.99	1.77	3.10	2.18	1.67	1.45	1.15
19	1.23	2.39	2.55	2.04	2.04	1.94	1.71	3.80	2.77	1.58	1.42	1.20
20	1.27	1.92	2.43	2.80	2.06	1.94	1.66	2.80	2.21	2.19	1.41	1.22
21	1.30	1.76	2.20	2.04	2.02	2.05	1.74	2.06	1.86	1.94	1.39	1.32
22	1.23	1.76	2.12	2.08	1.95	2.36	3.04	1.84	1.73	1.79	1.38	1.26
23	1.23	1.72	2.09	1.93	2.37	2.29	2.75	1.67	1.69	2.23	1.38	1.23
24	1.15	2.00	2.03	2.21	3.40	2.14	2.36	1.61	2.53	2.07	1.39	1.22
25	1.20	2.86	1.97	3.04	2.40	2.03	2.30	1.58	2.29	1.74	1.43	1.23
26	1.13	2.20	1.95	2.78	1.99	2.39	2.05	1.57	2.03	1.64	1.38	1.20
27	1.15	2.34	1.94	2.72	1.96	3.08	1.92	1.53	1.82	3.05	1.34	1.18
28	1.12	3.00	2.00	2.46	1.88	2.44	1.83	1.50	1.65	2.98	1.32	1.19
29	1.10	3.03	2.98	2.36	1.80	2.14	1.78	1.52	1.62	2.40	1.30	1.20
30	1.13	3.34	4.24	2.32	-------	3.65	1.79	1.53	2.11	1.92	1.31	1.19
31	1.07	-------	3.65	2.32	-------	3.22	-------	1.55	-------	1.74	1.39	-------

NOTE—Stage-discharge relation Dec. 8-11, 28-29, Jan. 4-6, 9, 10, 22, 23, Jan. 29 to Feb. 6, Feb. 20, 21 and Mar. 1-9 affected by ice.

Daily discarge, in second-feet, of Little Shenango River at Greenville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.4	8.1	2,710	1,140	140	110	316	104	52	198	82	32
2	10	12	1,080	438	110	100	228	88	54	112	76	28
3	7.4	28	416	298	100	90	184	83	50	80	67	28
4	29	33	244	240	120	80	262	71	73	62	63	30
5	28	57	184	220	700	75	171	68	184	316	59	29
6	19	57	156	200	550	75	138	65	1,420	531	171	27
7	12	52	146	184	461	80	122	59	1,080	212	158	34
8	10	41	130	298	1,080	75	171	54	788	100	88	30
9	12	37	110	280	1,280	80	136	50	565	90	65	27
10	7.4	33	100	220	531	124	108	46	761	212	94	25
11	11	30	100	198	335	94	102	42	316	136	843	27
12	19	33	198	198	262	171	133	41	198	158	298	24
13	71	28	605	184	198	228	124	39	146	279	119	21
14	42	19	2,350	198	394	960	143	37	108	681	87	18
15	34	21	900	184	960	531	171	36	92	335	73	17
16	24	27	843	140	630	228	117	33	78	171	65	19
17	21	298	1,210	158	394	171	112	50	71	112	52	12
18	18	788	461	140	316	156	104	580	212	85	50	11
19	21	279	335	171	171	143	92	960	416	70	45	17
20	25	138	298	438	160	143	83	438	212	212	44	19
21	29	102	212	171	140	171	98	171	124	143	41	32
22	21	102	184	140	146	262	565	119	96	108	39	24
23	21	94	160	130	262	244	416	85	88	228	39	21
24	11	158	140	212	734	198	262	75	335	171	41	19
25	17	461	130	565	279	171	244	70	244	98	46	21
26	8.9	212	120	438	156	279	171	68	171	80	39	17
27	11	262	120	394	148	580	138	62	115	565	34	15
28	8.1	531	130	298	128	298	117	57	82	531	32	16
29	6.7	565	340	260	110	198	106	60	76	279	29	17
30	8.9	707	1,210	220	-------	843	108	62	184	138	30	16
31	5.4	-------	843	180	-------	630	-------	65	-------	98	41	-------

NOTE—Discharge Dec. 8-11, 23-29, Jan. 4-6, 9, 10, 22, 23, Jan. 29 to Feb. 6, Feb. 20, 21 and Mar. 1-9 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River at Sharon.

Monthly discharge of Little Shenango River at Greenville, for the year ending Sept. 30, 1928

(Drainage area 107 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	71	5.4	18.6	0.174	0.20
November	788	8.1	174	1.63	1.82
December	2,710	100	521	4.87	5.62
January	1,140	130	275	2.57	2.96
February	1,280	100	379	3.54	3.82
March	960	75	245	2.29	2.64
April	565	83	175	1.64	1.83
May	960	33	124	1.16	1.34
June	1,420	50	280	2.62	2.92
July	681	62	213	1.99	2.29
August	843	29	97.1	.907	1.05
September	34	11	22.4	.209	.23
The Year	2,710	5.4	210	1.96	26.72

OHIO BASIN—STATION NO. 30

PYMATUNING CREEK NEAR ORANGEVILLE

Location.—At single-span steel highway bridge, about two miles southeast of Orangeville, Mercer County.

Drainage Area.—170 square miles.

Records Available.—January 1, 1914, to August 31, 1923, and November 19, 1925, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by Arthur E. Bernard.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left becomes inundated at a stage of about 5.4 feet. Bed is composed of gravel and boulders. Low-water control is at a riffle about 30 feet downstream from gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 7.82 feet observed at 7. a. m. December 2 (discharge, 3,060 second-feet); minimum, 0.62 foot from 5 p. m. September 29 to 5 p. m. September 30 (discharge, 4.0 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—During low stages slight variations in gage height are caused by operation of mills.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for low stages which are fair, owing to probable effect of mill operation upstream from the station.

Discharge measurements of Pymatuning Creek near Orangeville during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
44	Aug. 29	S. A. Kowalchik	0.82	15.6

Measurement made by wading 100 feet downstream from gage.

Daily Mean Gage Height, in feet, of Pymatuning Creek near Orangeville for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.64	0.85	7.12	6.91	3.01	1.48	3.93	1.45	0.99	1.72	3.09	0.76
2	.65	.82	7.67	6.24	2.69	1.42	3.68	1.39	.98	1.98	2.52	.71
3	.68	1.01	6.37	6.86	2.27	1.41	3.43	1.34	.93	1.65	1.96	.72
4	.69	.94	4.65	6.84	2.35	1.52	2.92	1.26	1.02	1.68	1.68	.81
5	.68	.93	3.57	5.68	5.30	1.57	2.32	1.14	1.41	4.50	1.44	.80
6	.67	.74	2.74	5.06	4.50	1.42	2.02	1.05	4.36	2.85	1.42	.80
7	.69	.94	2.11	4.26	5.07	1.35	1.80	1.10	6.21	2.34	1.40	.82
8	.69	.81	1.86	3.58	6.13	1.38	1.74	.94	5.76	2.13	1.33	.71
9	.70	.93	1.69	3.25	6.73	1.32	1.74	.93	5.09	1.99	1.33	.70
10	.71	.93	1.91	2.71	6.25	1.52	1.64	.98	4.79	1.44	1.44	.72
11	.74	.83	1.53	2.57	5.03	1.60	1.54	1.00	4.46	1.44	2.30	.70
12	.83	.83	1.64	2.55	4.00	1.59	1.64	.93	3.63	1.62	2.03	.78
13	.83	.71	3.37	2.49	3.45	1.84	1.57	.90	3.12	2.40	1.92	.84
14	.73	.89	5.92	2.37	3.95	3.34	1.60	.97	2.47	2.54	1.69	.78
15	.89	.91	6.77	2.27	4.73	3.11	1.66	.94	1.95	2.12	1.39	.83
16	.70	.87	6.87	2.15	5.60	3.32	1.65	.91	1.59	1.91	1.10	.72
17	.72	1.50	6.35	2.05	5.07	3.39	1.62	1.04	1.35	1.73	.98	.72
18	.73	1.89	5.39	1.91	4.05	2.97	1.53	1.53	1.91	1.61	.93	.81
19	.85	1.81	4.09	2.15	3.01	2.15	1.43	2.36	2.26	1.79	.90	.78
20	.85	1.67	3.27	2.57	2.59	1.91	1.42	2.46	2.03	2.86	.87	.72
21	.92	1.62	2.99	3.44	2.19	1.96	1.48	2.01	1.97	2.24	.92	.71
22	.79	1.48	2.49	4.08	2.00	2.16	3.06	1.72	1.72	1.96	.89	.70
23	.73	1.43	2.05	3.84	2.11	2.12	3.09	1.50	1.63	2.04	.86	.67
24	.79	1.84	1.91	3.70	2.65	2.00	3.25	1.28	1.57	1.71	.83	.68
25	.77	2.01	1.94	4.57	2.41	1.94	3.34	1.12	1.46	1.47	.88	.67
26	.79	1.50	1.89	4.27	2.47	2.06	3.09	1.07	1.38	1.62	.84	.68
27	.82	2.22	1.92	4.17	2.27	2.69	2.39	.96	1.18	2.64	.87	.67
28	.86	2.41	1.99	3.97	1.87	2.19	1.95	.99	1.11	3.94	.77	.66
29	.86	2.70	3.56	3.85	1.72	1.95	1.73	.97	1.12	3.33	.80	.63
30	.69	4.17	3.88	3.70	-------	3.63	1.62	.91	1.56	3.31	.81	.63
31	.82	-------	5.96	3.17	-------	3.61	-------	.97	-------	3.31	.79	-------

NOTE—Stage-discharge relation Dec. 10, 25-30, Jan. 3-10,19, Jan. 21 to Feb. 8, 12-14, 26-29, Mar. 4-6 and 16-19 affected by ice.

Daily discharge, in second-feet, of Pymatuning Creek near Orangeville, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.7	18	2,500	2,340	200	124	781	118	37	171	537	10
2	5.2	15	2,980	1,840	160	112	717	106	35	243	372	7.8
3	6.4	40	1,980	1,300	130	110	625	97	28	160	230	8.3
4	6.9	30	1,020	800	130	110	481	82	41	171	171	14
5	6.4	28	686	550	550	110	320	61	110	987	116	13
6	6.0	9.4	426	420	600	100	243	46	950	453	112	13
7	6.9	30	268	340	550	98	194	54	1,840	333	108	15
8	6.9	14	206	300	1,100	104	182	30	1,590	281	95	7.8
9	7.3	28	171	300	2,200	93	182	28	1,230	243	95	7.3
10	7.8	28	150	400	1,840	128	160	35	1,100	116	116	8.3
11	9.4	16	138	399	1,180	149	138	38	987	116	320	7.3
12	16	16	160	399	550	149	160	28	686	149	256	12
13	16	7.8	625	372	460	206	138	24	537	346	218	17
14	8.8	23	1,650	333	500	595	149	34	359	372	171	12
15	23	25	2,270	307	1,060	537	160	30	230	268	106	16
16	7.3	21	2,340	281	1,480	460	160	25	149	218	54	8.3
17	8.3	128	1,980	256	1,230	380	149	44	98	182	35	8.3
18	8.8	218	1,370	218	813	300	138	138	218	149	28	14
19	18	194	846	240	509	240	114	333	307	194	24	12
20	18	160	595	399	399	218	112	359	256	481	21	8.3
21	27	149	509	340	294	230	124	243	206	307	27	7.8
22	12	124	372	220	243	281	537	171	171	230	23	7.3
23	8.8	114	256	200	268	268	537	128	160	256	20	6.0
24	12	206	218	380	399	243	566	85	138	171	16	6.4
25	11	243	190	480	346	230	595	57	120	122	22	6.0
26	12	128	180	420	260	256	537	49	104	149	17	6.4
27	15	294	180	380	200	426	346	32	68	399	21	6.0
28	20	346	190	340	150	294	230	37	56	781	11	5.6
29	20	426	500	300	140	230	182	34	57	595	13	4.3
30	6.9	880	700	260	-------	686	149	25	138	595	14	4.3
31	15	-------	1,720	240	-------	686	-------	34	-------	595	12	-------

NOTE—Discharge Dec. 10, 25-30, Jan. 3-10, 19, Jan. 21 to Feb. 8, 12-14, 26-29, Mar. 4-6 and 16-19 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River at Sharon and near Jamestown.

Monthly discharge of Pymatuning Creek near Orangeville, for the year ending Sept. 30, 1928

(Drainage area 170 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	27	4.7	11.5	0.068	0.08
November	880	7.8	132	.776	.87
December	2,980	138	883	5.19	5.98
January	2,340	200	495	2.91	3.36
February	2,200	130	619	3.64	3.93
March	686	93	263	1.55	1.79
April	781	112	304	1.79	2.00
May	359	24	84.0	.494	.57
June	1,840	28	400	2.35	2.62
July	987	116	317	1.86	2.14
August	537	11	109	.641	.74
September	17	4.3	9.33	.055	.06
The Year	2,980	4.3	302	1.78	24.14

OHIO BASIN—STATION NO. 31

SHENANGO RIVER AT SHARON

Location.—At single-span steel highway bridge, Chestnut Street, Sharon, Mercer County.

Drainage Area.—611 square miles.

Records Available.—August 1, 1909, to September 30, 1928.

Gages.—Standard chain attached to upstream side of bridge; read by H. H. Gerber, Employe of the Carnegie Steel Company and S. Baskwell of the City Engineer's Office. Automatic water stage recorder installed April 14, 1927, with stream side of well forming a retaining wall extension of the right side of the river about 90 feet upstream from the chain gage. Inspected by employes of the Department of Forests and Waters. Elevation of gage zeros 840.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from the Mill, Chestnut or State Street Bridges or by wading.

Channel and Control.—Banks become inundated at a stage of about 12 feet. Bed is composed of silt and gravel. Control is a water main, backed with gravel and boulders, about one-quarter of a mile downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage recorded during the year, 12.30 feet at 4 a. m. December 2 (discharge, 9,760 second-feet); minimum, 2.00 feet at 8. a. m. October 29 (discharge, 37 second-feet).

Ice.—Water from this stream is used for industrial purposes and returned to the river at sufficiently high temperature to usually prevent the formation of ice for a considerable distance downstream from the station.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 2,000 second-feet; fairly well defined between 2,000 and 5,000 second-feet and well defined between 5,000 and 9,000 second feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Station is maintained in cooperation with Carnegie Steel Company, Farrell, and City Engineer's Office, Sharon, Pennsylvania.

Discharge measurements of Shenango River at Sharon during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
124	Nov. 21a	S. A. Kowalchik	3.68	519
125	" 25a	"	5.28	1,450
126	" 26a	"	4.57	1,020
127	Aug. 30b	"	2.31	89.8

a Measurement made from Mill Street Bridge.
b Measurement made by wading 1,000 feet downstream from gage.

Daily Mean Gage Height, in feet, of Shenango River at Sharon for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.08	2.16	11.58	9.20	3.94	3.60	6.05	3.58	2.66	4.10	4.17	2.32
2	2.08	2.22	11.80	7.92	3.84	3.42	5.78	3.45	2.57	3.72	3.88	2.28
3	2.13	2.22	9.38	6.48	3.45	3.32	5.52	3.30	2.53	3.55	3.53	2.25
4	2.12	2.27	7.20	7.54	3.60	3.15	5.35	3.17	2.60	3.26	3.23	2.25
5	2.13	2.32	5.76	6.84	5.84	3.18	4.80	3.06	2.82	4.47	3.10	2.25
6	2.22	2.50	5.00	6.70	6.45	3.17	4.38	2.98	7.08	5.30	3.45	2.23
7	2.19	2.55	4.50	6.47	5.94	3.10	4.14	2.92	9.04	4.46	3.70	2.25
8	2.13	2.57	4.35	6.54	7.35	3.02	4.14	2.82	7.63	3.80	3.40	2.27
9	2.09	2.51	3.78	5.36	9.38	3.25	4.02	2.75	7.07	3.67	3.16	2.24
10	2.08	2.51	3.65	5.00	8.84	3.42	3.80	2.68	7.28	4.35	3.60	2.25
11	2.08	2.47	3.65	4.95	7.42	3.30	3.70	2.64	6.53	4.20	5.52	2.22
12	2.22	2.42	4.05	4.95	6.15	3.58	3.78	2.61	5.58	4.17	5.05	2.18
13	2.36	2.39	6.24	4.85	5.44	4.00	3.87	2.57	5.10	4.55	3.82	2.18
14	2.46	2.32	10.47	4.76	6.13	6.29	3.91	2.50	4.60	6.18	3.40	2.17
15	2.41	2.34	9.95	4.65	8.10	6.30	4.17	2.50	4.10	5.00	3.10	2.14
16	2.34	2.38	9.74	4.43	7.75	5.80	3.95	2.48	3.66	4.24	2.87	2.15
17	2.26	3.89	9.45	4.40	7.12	5.51	3.78	2.50	3.35	3.78	2.68	2.08
18	2.33	5.46	7.50	4.25	6.33	5.04	3.72	3.40	4.25	3.50	2.49	2.05
19	2.32	4.75	6.03	4.43	5.35	4.55	3.57	5.70	5.86	3.61	2.54	2.07
20	2.34	3.76	5.47	5.53	4.80	4.22	3.38	5.30	4.70	5.08	2.48	2.12
21	2.30	3.68	5.16	4.08	4.23	4.30	3.50	4.42	4.08	4.60	2.48	2.15
22	2.26	3.76	4.82	3.94	4.06	4.92	5.98	3.77	3.94	4.08	2.57	2.15
23	2.20	3.64	4.52	4.17	4.47	4.71	5.93	3.42	3.69	4.42	2.49	2.15
24	2.18	3.96	4.28	4.36	5.88	4.43	5.48	3.17	3.86	4.18	2.43	2.11
25	2.20	5.13	4.06	5.68	5.27	4.33	5.50	3.00	4.22	3.57	2.40	2.12
26	2.17	4.55	3.85	5.45	4.34	4.84	5.12	2.83	4.14	3.38	2.42	2.13
27	2.19	4.73	3.90	4.95	4.18	5.94	4.64	2.77	3.64	5.38	2.37	2.12
28	2.12	5.78	3.74	4.67	3.95	5.17	4.20	2.70	3.28	6.11	2.34	2.10
29	2.12	5.92	5.27	4.48	3.68	4.60	3.90	2.62	3.15	5.14	2.31	2.10
30	2.12	7.62	7.55	4.40	-------	6.74	3.68	2.58	3.62	4.57	2.34	2.10
31	2.05	-------	7.95	4.24	-------	6.85	-------	2.62	-------	4.34	2.36	-------

NOTE—Stage-discharge relation Dec. 27 and Jan. 4-9 affected by ice.

Daily discharge, in second-feet, of Shenango River at Sharon, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	47	57	8,610	5,170	676	500	1,930	500	154	755	809	83
2	47	66	8,930	3,680	624	413	1,790	434	132	549	649	76
3	53	66	5,410	2,330	434	372	1,590	372	124	478	478	71
4	52	74	2,950	1,900	500	313	1,530	313	139	352	352	71
5	53	83	1,790	1,700	1,790	332	1,160	276	198	980	294	71
6	66	117	1,280	1,460	2,250	313	922	250	2,860	1,460	434	68
7	62	128	980	1,200	1,860	294	755	230	4,930	980	549	71
8	53	132	922	1,000	3,150	257	755	198	3,350	599	413	74
9	48	119	599	1,300	5,410	352	702	178	2,860	524	313	69
10	47	119	524	1,280	4,690	413	599	159	3,050	922	500	71
11	47	111	524	1,280	3,150	372	549	149	2,330	809	1,590	66
12	66	101	762	1,280	2,090	500	599	142	1,660	809	1,280	60
13	90	95	2,090	1,160	1,530	702	624	132	1,340	1,040	599	60
14	109	83	6,890	1,160	2,010	2,170	649	117	1,040	2,090	413	59
15	99	86	6,180	1,040	3,900	2,170	809	117	755	1,280	294	55
16	86	93	5,790	922	3,570	1,790	676	113	524	809	214	56
17	73	649	5,410	922	2,860	1,590	599	117	392	599	159	47
18	84	1,590	3,250	809	2,170	1,280	549	413	809	455	115	43
19	83	1,160	1,930	922	1,530	1,040	478	1,730	1,860	500	126	45
20	86	574	1,590	1,590	1,160	809	413	1,460	1,100	1,340	113	52
21	79	549	1,400	755	809	865	455	922	755	1,040	113	56
22	73	574	1,160	676	755	1,220	1,930	574	676	755	132	56
23	63	524	980	809	980	1,100	1,860	413	549	922	115	56
24	60	676	865	922	1,860	922	1,590	313	624	809	103	50
25	63	1,340	755	1,750	1,460	865	1,590	257	809	478	97	52
26	59	1,040	624	1,530	865	1,160	1,340	201	755	413	101	53
27	62	1,100	550	1,280	809	1,860	1,040	184	524	1,530	92	52
28	52	1,790	574	1,100	676	1,400	809	164	372	2,010	86	49
29	52	1,860	1,460	980	549	1,040	649	144	313	1,340	81	49
30	52	3,350	3,350	922	-------	2,500	549	135	500	1,040	86	49
31	43	-------	3,790	809	-------	2,590	-------	144	-------	865	90	-------

NOTE—Discharge Dec. 27 and Jan. 4–9 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River at New Castle.

Monthly discharge of Shenango River at Sharon, for the year ending Sept. 30, 1928

(Drainage area 611 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	109	43	64.8	0.106	0.12
November	3,350	57	610	1.00	1.12
December	8,930	524	2,640	4.32	4.98
January	5,170	676	1,410	2.31	2.66
February	5,410	434	1,870	3.06	3.30
March	2,590	257	1,020	1.67	1.92
April	1,930	413	983	1.61	1.80
May	1,730	113	350	.573	.66
June	4,930	124	1,180	1.93	2.15
July	2,090	352	920	1.51	1.74
August	1,590	81	348	.570	.66
September	83	43	59.7	.098	.11
The Year	8,930	43	952	1.56	21.22

OHIO BASIN—STATION NO. 32

SHENANGO RIVER AT NEW CASTLE

Location.—At two-span steel highway bridge, West Washington Street, New Castle, Lawrence County.

Drainage Area.—797 square miles.

Records Available.—January 1, 1910, to September 30, 1928.

Gage.—Standard chain attached to upstream side of bridge; read by J. L. Moseley. Elevation of gage zero 787.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and rock. Control is at a riffle, at the head of a low island, about 300 feet downstream from gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 9.60 feet at noon December 2 (discharge, 10,800 second-feet); minimum, 0.86 foot at 4 p. m. October 1 and 4.10 p. m. October 6 (discharge, 32 second-feet).

Ice.—Stage-discharge relation seldom affected by ice.

Diversions.—Water supply for the City of New Castle is taken from the river about one and one-half miles upstream from the gage.

Accuracy.—Stage-discharge relation permanent throughout the year. Rating curve fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—A record of the quantity of water diverted by the City of New Castle is furnished by the Superintendent of the New Castle Water Works, New Castle, Pennsylvania.

Discharge measurements of Shenango River at New Castle during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
48	Aug. 30	S. A. Kowalchik	1.33	142

Measurement made by wading 2,000 feet upstream from gage.

Daily Mean Gage Height, in feet, of Shenango River at New Castle for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.87	1.07	7.95	6.78	2.44	2.25	4.60	2.28	1.52	2.67	3.04	1.44
2	.98	1.16	9.40	6.61	2.33	2.27	4.48	2.26	1.56	2.72	4.51	1.34
3	.94	1.29	8.44	5.40	2.22	2.15	4.06	2.15	1.47	2.23	3.01	1.25
4	.95	1.29	-------	4.50	2.10	2.10	4.20	2.02	1.55	2.10	2.20	1.18
5	.96	1.26	4.60	4.13	3.24	2.01	3.65	1.93	2.16	3.20	2.11	1.21
6	.91	1.30	3.70	4.02	4.47	2.01	3.15	1.86	4.05	4.58	2.61	1.22
7	.91	1.43	3.25	3.55	4.50	2.07	3.01	1.82	6.01	3.70	2.49	1.17
8	.96	1.49	3.05	3.27	5.28	1.97	3.07	1.73	6.52	2.80	2.42	1.18
9	1.00	1.44	2.65	3.52	6.25	1.98	2.82	1.66	5.68	2.42	2.07	1.14
10	.92	1.43	2.26	3.55	6.96	2.25	2.54	1.61	5.48	3.08	2.07	1.11
11	.91	1.44	2.35	3.38	6.15	2.26	2.42	1.56	5.05	2.98	3.09	1.10
12	1.09	1.40	2.80	3.42	5.38	2.25	2.52	1.47	4.42	3.24	3.65	1.15
13	1.29	1.38	4.17	3.23	4.14	2.57	2.50	1.46	3.65	3.00	2.79	1.10
14	1.30	1.35	8.75	3.25	4.23	4.20	2.42	1.42	3.28	4.57	2.39	1.09
15	1.29	1.37	8.53	3.06	6.35	5.12	2.53	1.37	2.92	3.90	1.97	1.05
16	1.32	1.37	8.08	3.08	6.62	4.20	2.64	1.33	2.53	3.48	1.86	1.10
17	1.23	2.55	7.60	2.91	5.68	4.02	2.56	1.39	2.30	2.76	1.70	1.03
18	1.29	4.25	5.73	2.88	5.05	3.93	2.44	1.51	2.55	2.32	1.58	1.14
19	1.25	3.70	4.88	2.84	4.40	3.40	2.42	3.63	5.33	2.48	1.53	1.08
20	1.22	2.96	4.15	2.89	3.55	2.93	2.22	3.92	4.00	3.95	1.46	.97
21	1.30	2.37	3.82	3.63	3.23	3.02	2.30	3.12	3.45	3.75	1.47	1.10
22	1.21	2.44	3.55	3.59	2.78	3.72	3.70	2.57	3.50	3.12	2.07	1.04
23	1.22	2.40	3.20	2.78	3.05	3.58	4.64	2.20	2.85	3.24	1.73	1.04
24	1.21	2.82	3.10	2.78	4.30	3.26	4.06	2.02	2.80	3.17	1.56	1.04
25	1.21	3.40	2.80	3.79	3.90	3.17	3.88	1.89	2.97	2.10	1.48	1.05
26	1.19	3.52	2.58	4.08	3.12	3.54	3.62	1.81	3.14	2.34	1.39	1.00
27	1.15	3.65	2.49	3.38	2.95	4.28	3.27	1.76	2.68	3.22	1.41	1.04
28	1.07	4.10	2.41	3.15	2.49	4.24	2.97	1.69	2.32	4.36	1.39	.99
29	1.08	4.55	2.95	3.00	2.42	3.58	2.55	1.59	2.18	4.47	1.32	.93
30	1.10	4.62	5.45	2.87	-------	3.62	2.35	1.54	2.29	3.89	1.32	.94
31	1.08	-------	5.90	2.83	-------	4.54	-------	1.50	-------	3.42	1.46	-------

NOTE—Gage height Dec. 4 not observed.

Daily discharge, in second-feet, of Shenango River at New Castle, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	68	7,600	5,500	705	570	2,600	600	208	845	1,120	179
2	49	92	10,400	5,180	635	570	2,500	570	223	880	2,500	145
3	42	129	8,360	3,470	540	510	2,120	510	190	570	1,120	118
4	44	129	4,400	2,500	480	480	2,220	425	220	480	540	97
5	46	120	2,600	2,120	1,290	425	1,640	390	510	1,290	480	106
6	38	132	1,730	2,020	2,500	425	1,290	355	2,020	2,600	810	109
7	38	176	1,290	1,640	2,500	452	1,120	325	4,280	1,730	740	95
8	46	196	1,120	1,380	3,340	410	1,200	294	5,020	965	670	97
9	52	179	845	1,550	4,560	415	965	264	3,860	670	452	86
10	39	176	570	1,640	5,830	570	775	243	3,600	1,200	452	78
11	38	179	635	1,470	4,560	570	670	223	3,000	1,120	1,200	75
12	73	165	965	1,470	3,470	570	740	190	2,400	1,290	1,640	89
13	129	158	2,220	1,290	2,120	775	740	186	1,640	1,120	965	75
14	132	148	9,170	1,290	2,220	2,220	670	172	1,380	2,600	670	73
15	129	155	8,560	1,200	4,860	3,090	775	155	1,040	1,930	410	64
16	139	155	7,790	1,200	5,180	2,220	845	142	775	1,550	355	75
17	112	775	6,870	1,040	3,860	2,020	775	162	600	922	280	59
18	129	2,220	3,860	1,040	3,000	1,930	705	204	775	600	231	86
19	118	1,730	2,900	1,000	2,400	1,470	670	1,640	3,340	740	212	59
20	109	1,080	2,220	1,040	1,640	1,080	540	1,930	2,020	2,020	186	47
21	132	635	1,830	1,640	1,290	1,120	600	1,200	1,470	1,830	190	75
22	106	705	1,640	1,640	965	1,730	1,730	775	1,550	1,200	452	61
23	109	670	1,290	965	1,120	1,640	2,600	540	1,000	1,290	294	61
24	106	965	1,200	965	2,310	1,380	2,120	425	965	1,290	223	61
25	106	1,470	965	1,830	1,930	1,290	1,930	370	1,080	480	193	64
26	100	1,550	810	2,120	1,200	1,550	1,640	330	1,200	635	162	52
27	89	1,640	740	1,470	1,080	2,310	1,380	307	880	1,290	188	61
28	68	2,120	670	1,290	740	2,220	1,080	276	600	2,400	162	50
29	70	2,600	1,080	1,120	670	1,640	775	235	540	2,500	139	41
30	75	2,600	3,470	1,000	-------	1,640	635	216	600	1,930	139	42
31	70	-------	4,140	1,000	-------	2,500	-------	200	-------	1,470	186	-------

NOTE—Discharge does not include the water diverted from the stream at the New Castle Water Works. Discharge Dec. 4 estimated, because of no gage height record, from weather records, study of gage height graph and discharge of Shenango River at Sharon.

Monthly discharge of Shenango River at New Castle, for the year ending Sept. 30, 1928

(Drainage area 797 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	139	33	82.8	0.112	0.13
November	2,600	68	771	.975	1.09
December	10,400	570	3,200	4.14	4.77
January	5,560	965	1,740	2.20	2.54
February	5,830	480	2,310	2.91	3.14
March	3,090	410	1,280	1.62	1.87
April	2,600	540	1,270	1.61	1.80
May	1,930	142	447	.570	.66
June	5,020	190	1,570	1.97	2.20
July	2,600	480	1,340	1.68	1.94
August	2,500	139	559	.711	.82
September	179	41	79.3	.109	.12
The Year	10,400	33	1,230	1.54	21.08

NOTE—Discharge does not include the water diverted from the stream at the New Castle Water Works. Run-off includes the quantity of water diverted.

OHIO BASIN—STATION NO. 33

CONNOQUENESSING CREEK NEAR HAZEN

Location.—At single-span steel highway bridge, about one-half mile south of Baltimore & Ohio Railroad station at Hazen, Beaver County.

Drainage Area.—355 square miles.

Records Available.—June 3, 1915, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read by John D. Sockaci.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank becomes inundated at a stage of about 10 feet; left is high and not subject to overflow. Bed is composed of gravel and boulders. Control is a deposit of gravel on ledge about 250 feet downstream from gage; permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 13.00 feet at 5 a. m. November 14 (discharge, about 10,700 second-feet); minimum, 1.30 feet on September 30 (discharge, 18 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined to 1,000 second-feet and fairly well defined from 1,000 to 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh, Pennsylvania.

Discharge measurements of Connoquenessing Creek near Hazen during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
29	Aug. 13	S. A. Kowalchik	1.95	130

Measurement made by wading 500 feet downstream from gage.

Daily Mean Gage Height, in feet, of Connoquenessing Creek near Hazen for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.93	2.00	6.91	3.56	2.37	2.57	4.37	2.86	1.98	3.19	2.72	1.65
2	1.71	2.03	5.18	4.22	2.37	2.49	3.72	2.67	1.90	2.59	2.71	1.61
3	2.09	2.27	4.18	4.98	2.28	2.40	3.47	2.51	1.87	2.55	2.52	1.56
4	2.20	3.00	3.66	5.20	2.38	2.36	3.30	2.41	2.00	2.46	2.42	1.51
5	2.03	2.91	3.24	4.96	3.93	2.26	3.08	2.35	5.60	2.79	2.28	1.49
6	1.89	2.94	2.96	4.73	3.42	2.19	2.88	2.30	9.30	3.40	2.54	1.47
7	2.18	2.84	2.80	4.61	3.48	2.12	2.84	2.23	6.50	2.94	2.37	1.45
8	2.08	2.65	2.79	4.73	4.23	2.09	3.44	2.18	5.86	2.68	2.25	1.50
9	2.13	2.60	2.61	5.12	5.73	2.24	3.01	2.11	5.65	2.53	2.20	1.47
10	2.06	2.64	2.47	4.84	4.76	2.60	2.94	2.04	6.12	2.48	2.13	1.45
11	1.97	2.42	2.75	4.41	3.79	2.45	2.89	2.00	4.50	2.37	2.11	1.43
12	2.09	2.39	4.82	3.23	3.32	2.40	2.91	1.97	3.68	2.36	2.06	1.42
13	4.25	2.35	6.65	2.73	3.09	2.62	2.86	1.94	3.37	2.99	1.95	1.44
14	3.45	2.19	10.75	2.64	3.88	4.82	2.81	1.88	3.22	6.29	1.90	1.40
15	2.94	2.18	7.20	2.64	6.63	3.74	2.75	1.84	2.84	4.44	1.82	1.37
16	2.77	2.45	9.35	2.67	5.53	3.28	2.57	1.81	2.58	-------	1.84	1.35
17	2.59	8.06	8.90	2.65	4.44	3.14	2.49	1.86	2.40	3.24	2.11	1.34
18	2.47	11.26	6.10	2.53	3.94	3.01	2.38	1.95	2.46	2.91	1.92	1.34
19	3.33	6.18	4.10	2.62	3.43	2.90	2.35	2.15	3.08	3.69	1.85	1.35
20	3.38	4.83	3.53	3.54	3.11	2.84	2.33	3.35	2.81	9.79	1.82	1.39
21	2.92	4.34	3.20	2.79	2.82	3.03	2.49	2.70	2.69	8.09	1.79	1.44
22	-------	3.51	3.06	2.74	2.78	3.44	3.86	2.37	3.44	5.59	2.01	1.49
23	-------	3.00	2.93	3.28	3.29	3.39	4.05	2.23	2.88	5.72	2.08	1.47
24	2.59	2.95	2.78	3.29	3.74	3.32	3.87	2.11	2.81	4.77	1.93	-------
25	2.45	3.13	2.70	3.99	3.48	3.24	3.51	2.07	2.60	3.49	1.89	-------
26	2.25	3.03	2.64	3.11	3.21	3.43	3.22	2.01	2.54	3.12	1.84	-------
27	2.16	4.01	2.62	2.85	2.88	3.69	2.96	2.00	2.43	3.77	1.75	1.34
28	2.13	5.60	2.56	2.80	2.72	3.27	2.96	1.99	2.34	5.38	1.71	1.34
29	2.09	6.51	2.75	2.49	2.63	3.12	3.06	1.95	2.39	3.72	1.66	1.33
30	2.04	6.15	3.20	2.40	-------	7.32	3.04	1.91	2.78	2.91	1.62	1.30
31	2.01	-------	3.45	2.45	-------	5.77	-------	1.95	-------	2.71	1.63	-------

NOTE—Gage height Oct. 22, 23, July 16 and Sept. 24-26 not observed. Stage-discharge relation Jan. 2-12 affected by ice.

Daily discharge, in second-feet, of Connoquenessing Creek near Hazen, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	138	3,870	1,100	299	391	1,740	564	132	798	475	48
2	58	149	2,380	950	299	359	1,170	446	106	418	475	42
3	171	251	1,570	800	255	314	983	364	98	391	364	37
4	217	660	1,170	600	304	294	870	319	138	344	324	32
5	149	595	834	500	1,340	246	726	290	2,720	533	255	30
6	103	628	628	500	942	213	595	265	6,250	942	391	29
7	209	564	533	550	1,020	183	564	231	3,520	628	299	28
8	168	446	533	600	1,570	171	983	209	2,980	475	241	31
9	188	418	418	750	2,820	236	660	179	2,720	391	217	29
10	160	446	349	850	2,060	418	628	153	3,150	354	188	28
11	128	324	504	800	1,250	339	595	138	1,820	299	179	26
12	171	309	2,060	600	870	314	595	128	1,100	294	160	25
13	1,570	290	3,610	504	726	418	564	119	906	660	122	27
14	983	213	7,960	446	1,340	2,060	533	100	798	3,330	106	24
15	628	209	4,150	446	3,610	1,170	504	89	564	1,740	84	22
16	504	339	6,350	446	2,650	870	391	81	418	1,200	89	21
17	418	4,980	5,800	446	1,740	762	359	95	314	834	179	20
18	349	8,560	3,150	391	1,340	660	304	122	344	595	112	20
19	906	3,240	1,490	418	983	595	290	196	726	1,170	92	21
20	942	2,060	1,100	1,020	726	564	280	906	533	6,800	84	23
21	595	1,650	798	533	533	693	359	475	475	4,980	76	27
22	600	1,020	693	504	533	983	1,340	299	983	2,720	142	30
23	480	660	628	870	870	942	1,410	231	595	2,820	168	29
24	418	628	533	870	1,170	870	1,340	179	533	2,060	116	28
25	339	762	475	1,410	1,020	834	1,020	164	418	1,020	103	24
26	241	693	446	726	798	983	798	142	391	726	89	24
27	200	1,410	418	564	595	1,170	628	138	329	1,250	67	20
28	188	2,720	391	533	475	834	628	135	285	2,560	58	20
29	171	3,520	504	359	446	726	693	122	309	1,170	50	20
30	153	3,240	798	314	-------	4,230	693	109	533	595	44	18
31	142	-------	983	339	-------	2,900	-------	122	-------	475	46	-------

NOTE—Discharge estimated Oct. 22, 23, July 16 and Sept. 24-26, because of no gage height record, from weather records and study of gage height graph, and Jan. 2-12, because of ice, from weather records, study of gage height graph and comparison with similar studies for Slippery Rock Creek at Wurtemburg, Shenango River at Sharon and Chartiers Creek at Carnegie.

Monthly discharge of Connoquenessing Creek near Hazen, for the year ending Sept. 30, 1928

(Drainage area 355 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,570	58	376	1.06	1.22
November	8,560	138	1,370	3.86	4.31
December	7,960	349	1,780	5.01	5.78
January	1,410	314	637	1.79	2.06
February	3,610	255	1,120	3.15	3.40
March	4,230	171	830	2.34	2.70
April	1,740	280	741	2.09	2.33
May	906	81	229	.645	.74
June	6,250	98	1,140	3.21	3.58
July	6,800	294	1,370	3.86	4.45
August	475	44	174	.490	.56
September	48	18	26.8	.075	.08
The Year	8,560	18	815	2.30	31.21

OHIO BASIN—STATION NO. 34

SLIPPERY ROCK CREEK AT WURTEMBURG

Location.—At three-span steel highway bridge, Wurtemburg, Lawrence County, about one-half mile downstream from the former gaging station, and about one mile upstream from the mouth of creek.

Drainage Area.—404 square miles.

Records Available.—January 1, 1912, to September 30, 1922, for station at former location, and October 1, 1922, to September 30, 1928. for station at present site.

Gage.—Standard chain attached to upstream side of bridge; read by Grace Barton Wright. Elevation of gage zero 812.48 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—The right bank is high and not subject to overflow; the left becomes inundated at a stage of about 7.0 feet, and the stream overflows about 75 feet of the highway. Bed is composed of gravel and rocks; not subject to change. Low-water control is at a riffle, where the bed is composed of gravel and boulders, about 200

feet downstream from the gage; probably permanent. There is a decided change in the profile of the stream at a riffle where the bed is composed of boulders and rock, about 1,000 feet downstream from the gage.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 11.80 feet at 1 p. m. December 14 (discharge, 20,700 second-feet); minimum, 2.26 feet at 8 a. m. September 13 and 5 p. m. September 26, 27 and 8 a. m. September 29 (discharge, 43 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 1,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for intermediate and high stages, when they are probably fair.

Discharge measurements of Slippery Rock Creek at Wurtemburg during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
49	Nov. 22	S. A. Kowalchik	4.06	917
50	Aug. 13a	do	2.94	234

a Measurement made by wading 2,000 feet upstream from gage.

Daily Mean Gage Height, in feet, of Slippery Rock Creek at Wurtemburg for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.48	-------	8.10	4.66	5.65	3.40	4.91	3.13	2.66	3.98	3.57	3.13
2	2.42	-------	6.55	4.12	5.68	3.30	4.35	3.00	2.59	3.48	3.84	2.86
3	2.33	-------	5.16	3.80	5.50	3.06	4.04	2.90	2.56	3.36	3.79	2.63
4	2.40	-------	4.18	3.78	5.60	2.93	3.94	2.86	3.21	3.24	3.29	2.54
5	3.05	-------	3.82	3.81	5.68	2.92	3.82	2.89	5.25	4.17	3.01	2.48
6	2.76	-------	3.58	3.65	5.05	3.15	3.62	2.80	6.66	5.53	3.87	2.48
7	2.59	-------	3.42	3.45	4.95	3.18	3.59	2.71	5.99	4.39	3.94	2.68
8	2.81	-------	3.72	3.92	4.67	3.12	4.05	2.66	5.05	3.66	3.59	2.56
9	2.74	-------	3.40	4.36	4.52	3.52	3.80	2.66	5.20	3.25	3.41	2.48
10	2.64	-------	3.28	4.10	4.22	3.90	3.57	2.64	5.36	3.50	3.27	2.45
11	2.55	-------	3.28	3.81	4.02	3.77	3.46	2.82	4.68	3.32	3.01	2.46
12	2.75	-------	4.50	3.74	3.80	3.70	3.48	2.71	4.13	3.11	3.33	2.36
13	3.45	-------	5.85	3.68	3.82	4.10	3.49	2.64	3.69	3.56	2.98	2.28
14	4.17	-------	10.40	3.66	3.25	6.40	3.46	2.61	3.48	3.96	2.75	2.36
15	3.35	-------	7.90	3.54	6.10	5.90	3.47	2.59	3.37	3.87	2.68	2.37
16	3.13	-------	6.95	3.48	5.60	5.00	3.33	2.54	3.20	3.58	2.63	2.34
17	2.90	-------	6.45	3.38	5.08	4.24	3.19	2.62	3.04	3.43	2.60	2.30
18	2.83	-------	5.51	3.30	4.68	3.12	3.12	2.80	2.97	3.06	2.59	3.26
19	3.20	-------	4.88	3.50	4.05	3.85	3.06	4.15	4.60	3.20	2.56	3.28
20	3.65	-------	4.45	4.60	3.85	3.71	2.96	4.56	5.72	6.07	2.54	2.97
21	3.56	-------	4.20	3.70	3.50	3.78	3.13	3.68	4.60	5.93	2.60	2.52
22	3.33	-------	3.95	3.40	3.30	4.58	4.60	3.22	4.98	5.50	4.60	2.46
23	3.08	3.82	3.82	3.30	3.85	4.56	4.53	2.88	4.22	5.52	3.80	2.38
24	2.94	3.88	3.58	3.26	4.23	4.14	4.15	2.78	3.70	5.07	3.02	2.37
25	2.84	4.63	3.44	3.90	3.75	3.80	3.85	2.74	3.50	4.37	2.88	2.34
26	2.74	4.08	3.36	4.20	3.70	4.65	3.56	2.68	3.40	3.83	2.75	2.28
27	2.66	4.64	3.45	3.65	3.65	5.60	3.42	2.62	3.26	3.61	2.62	2.26
28	2.62	4.87	3.42	3.40	3.53	5.10	3.35	2.84	3.14	4.05	2.56	2.29
29	2.60	5.70	4.06	4.55	3.47	4.92	3.29	2.74	3.15	4.07	2.54	2.27
30	2.57	5.65	5.41	4.75	-------	5.60	3.10	2.69	4.00	3.39	3.50	2.28
31	2.52	-------	5.11	4.65	-------	4.95	-------	2.68	-------	3.15	3.96	-------

NOTE—Gage height Nov. 1-22 not observed. Stage-discharge relation Jan. 4-6 and Jan. 29 to Feb. 8 affected by ice.

Daily discharge, in second-feet, of Slippery Rock Creek at Wurtemburg, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	90	95	7,840	1,510	320	461	1,730	326	138	890	554	326
2	77	95	4,370	976	380	404	1,230	258	118	522	769	204
3	57	110	2,080	730	500	280	890	216	111	432	730	130
4	72	360	1,070	600	1,200	230	849	204	351	378	404	105
5	280	460	730	500	1,500	226	730	214	2,080	1,070	258	90
6	169	460	587	460	1,100	326	587	182	4,580	2,480	769	90
7	118	440	461	492	1,100	351	587	153	3,080	1,230	849	144
8	186	360	656	808	1,400	302	890	138	1,830	622	587	111
9	163	300	461	1,230	1,320	404	730	138	2,080	378	461	90
10	133	280	404	976	1,070	808	554	133	2,340	522	378	84
11	108	260	404	730	890	693	492	189	1,510	404	258	86
12	166	200	1,320	693	730	656	522	153	976	302	432	64
13	492	180	2,920	656	730	976	522	133	656	554	250	47
14	1,070	140	15,200	622	1,230	3,970	492	124	522	849	166	64
15	432	150	7,350	554	3,410	3,080	492	118	432	769	144	66
16	326	220	5,220	522	2,620	1,830	432	105	351	587	130	59
17	218	1,600	3,970	461	1,950	1,070	351	127	280	492	121	51
18	193	8,500	2,480	404	1,510	302	302	182	246	280	118	378
19	351	5,000	1,730	522	890	769	280	1,070	1,410	351	111	404
20	622	2,000	1,230	1,410	769	656	242	1,410	2,780	3,410	105	246
21	554	1,600	1,070	656	522	730	326	656	1,410	3,080	121	100
22	432	1,100	849	461	404	1,410	1,410	351	1,830	2,480	1,410	86
23	302	730	730	404	769	1,410	1,320	211	1,070	2,480	730	68
24	234	808	587	378	1,070	976	1,070	176	656	1,950	258	66
25	196	1,410	492	808	698	730	769	163	522	1,230	211	59
26	163	976	432	1,070	656	1,410	554	144	461	769	166	47
27	138	1,410	492	622	622	2,620	461	127	378	587	127	43
28	127	1,730	461	461	554	1,950	432	196	326	890	111	49
29	121	2,780	976	360	492	1,730	404	163	326	976	105	45
30	113	2,620	2,340	300	-------	2,620	302	147	890	461	522	47
31	100	-------	1,960	300	-------	1,830	-------	144	-------	326	849	-------

NOTE—Discharge estimated Nov. 1-22, because of no gage height record, from weather records and study of gage height graph, and Jan. 4-6 and Jan. 29 to Feb. 8, because of ice, from weather records, study of gage height graph and comparison with similar studies for Connoquenessing Creek near Hazen, Shenango River at Sharon and Chartiers Creek at Carnegie.

Monthly discharge of Slippery Rock Creek at Wurtemburg, for the year ending Sept. 30, 1928

(Drainage area 404 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,070	57	252	0.624	0.72
November	8,500	95	1,210	3.00	3.35
December	15,200	404	2,290	5.67	6.54
January	1,410	300	667	1.65	1.90
February	3,410	320	1,050	2.60	2.80
March	3,970	226	1,140	2.82	3.25
April	1,730	242	665	1.65	1.84
May	1,410	105	260	.644	.74
June	4,580	111	1,120	2.77	3.09
July	3,410	280	1,020	2.52	2.90
August	849	105	394	.975	1.12
September	404	43	115	.285	.32
The Year	15,200	43	848	2.10	28.57

OHIO BASIN—STATION NO. 35

RACCOON CREEK AT MOFFATT'S MILL

Location.—At single-span steel highway bridge, about four miles west of Woodlawn, at Moffatt's Mill, Beaver County.

Drainage Area.—178 square miles.

Records Available.—May 27, 1915, to September 30, 1928.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by Henry Schissler.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of rocks and rock shingle; permanent. Control is at a riffle about 100 feet downstream from the gage. Stage-discharge relation may be affected by aquatic growth at control section during summer months.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 8.50 feet at 11. a. m. March 30; minimum, 1.44 feet from 6 p. m. October 2 to 7 a. m. October 3.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh, Pennsylvania.

Discharge measurements of Raccoon Creek at Moffatt's Mill during the year ending Sept. 30, 1928

No.	Date	Made by	Gage Height	Discharge
19	Aug. 14	S. A. Kowalchik	Feet 1.90	Sec. ft. 39.0

Measurement made by wading 500 feet upstream from gage.

Daily Mean Gage Height, in feet, of Raccoon Creek at Moffatt's Mill, for the year ending Sept. 30, 1928

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.55	1.80	5.45	2.96	2.55	2.57	3.67	3.13	2.00	2.65	------	1.88
2	1.46	1.92	3.88	2.87	2.50	2.55	3.45	2.89	2.00	2.69	------	1.74
3	1.53	2.23	3.52	2.82	2.44	2.49	3.45	2.79	1.97	2.59	------	1.66
4	1.66	2.50	3.20	2.78	2.45	2.43	3.59	2.61	2.14	2.50	------	1.66
5	1.66	2.50	3.02	2.76	3.52	2.39	3.45	2.27	4.51	4.46	------	1.78
6	1.66	2.73	2.92	2.70	3.00	2.87	3.18	2.14	5.51	3.81	------	1.70
7	1.66	2.56	2.82	2.70	2.87	2.35	2.98	2.11	4.16	3.03	------	1.68
8	1.64	2.42	2.71	2.70	3.79	2.33	2.98	2.34	3.44	2.74	------	1.66
9	1.62	2.39	2.64	2.68	3.89	2.48	2.89	2.29	4.11	2.60	------	1.60
10	1.60	2.23	2.55	2.66	3.52	2.57	2.81	2.24	4.41	2.53	------	1.60
11	1.55	2.18	2.64	2.58	3.23	2.55	2.77	2.22	3.51	2.44	------	1.60
12	1.59	2.12	3.78	2.55	3.04	2.52	2.79	2.16	3.17	2.76	------	1.60
13	2.72	2.12	3.95	2.60	2.87	2.49	2.77	2.12	2.92	3.81	------	1.58
14	2.31	2.10	6.25	2.46	2.99	3.97	2.73	2.12	2.76	4.21	1.90	1.58
15	1.96	2.05	4.35	2.42	4.67	3.49	2.70	2.12	2.61	3.24	1.88	1.58
16	1.85	2.21	5.35	2.37	3.27	3.03	2.67	2.14	2.41	2.90	1.86	1.58
17	1.72	5.50	4.50	2.34	2.68	2.93	2.63	2.16	2.36	2.76	1.86	1.58
18	2.05	5.65	3.80	2.32	2.89	2.89	2.55	2.22	2.47	------	1.83	1.54
19	3.65	3.55	3.58	2.41	2.63	2.77	2.51	2.41	3.36	------	1.80	1.52
20	3.44	3.20	3.35	2.90	2.86	2.75	2.42	3.48	2.71	------	1.76	1.73
21	2.96	3.00	3.10	2.82	2.55	3.00	2.43	2.99	3.21	------	1.81	1.69
22	2.63	2.92	3.02	2.73	3.07	3.09	3.42	2.79	5.56	------	1.90	1.64
23	2.37	2.82	2.85	2.68	4.45	3.22	3.62	2.30	3.86	------	1.90	1.60
24	2.24	2.72	2.71	2.73	3.45	3.02	3.75	2.28	3.27	------	1.88	1.57
25	2.14	2.59	2.52	3.60	3.18	2.98	3.35	2.22	3.06	------	1.82	1.56
26	1.53	2.59	2.48	2.89	3.13	3.11	3.67	2.14	2.90	------	1.78	1.55
27	1.92	3.16	2.42	2.68	3.07	3.18	3.32	2.08	2.69	------	1.74	1.54
28	1.90	5.35	2.40	2.62	2.98	2.89	3.39	2.08	2.55	------	1.79	1.52
29	1.80	4.48	2.64	2.62	2.68	2.75	3.45	2.06	2.92	------	1.68	1.50
30	1.80	4.15	3.05	2.60	------	6.25	3.49	2.04	3.06	------	1.73	1.50
31	1.80	------	2.98	2.58	------	4.47	------	2.04	------	------	2.02	------

NOTE—Stage-discharge relation Jan. 2-7, Feb. 19, 20 and 26-29 affected by ice. Gage height July 18 to Aug. 13 not observed.

TABLE NO. XXII

Miscellaneous discharge measurements made during the year ending September 30, 1928

Stream	Location	Date	Gage Height	Discharge	Drainage Area	Run-off in Second-feet	Remarks
			Feet	Sec.-ft.	Sq. Mi.	Sq. Mi.	
Delaware Basin							
Ingham Spring	Near New Hope, Bucks County	Aug. 1	*	4.84	------	------	Determined from current meter measurement of discharge in overflow section of dam.
Ingham Spring	Near New Hope, Bucks County	Aug. 1	*	5.54	------	------	Determined from current meter measurements of discharge n stream flowing from spring; includes some leakage through dam.
Susquehanna Basin							
Big Spring	Bellefonte, Centre County	Apr. 6	------	17.82	------	------	Computed from the time required to fill a known capacity of the reservoir.
Frankstown Branch, Juniata River	Huntingdon, Huntingdon County	Aug. 15	2.14	822	845	0.97	Made at former gaging station.
Loyalsock Creek	Barbours, Lycoming County	July 16	------	597	376	1.59	Record furnished by Pennsylvania State College.
Loyalsock Creek	Barbours, Lycoming County	18	------	395	376	1.05	
Loyalsock Creek	Barbours, Lycoming County	20	------	302	376	.80	
Loyalsock Creek	Barbours, Lycoming County	26	------	216	376	.57	
Loyalsock Creek	Barbours, Lycoming County	30	------	374	376	.99	Measurements made by students at highway bridge.
Loyalsock Creek	Barbours, Lycoming County	Aug. 2	------	266	376	.71	
Loyalsock Creek	Barbours, Lycoming County	7	------	751	376	2.00	
Rock Spring	Tombicken, Luzerne County	May 11	------	.03	------	------	Computed from the time required to fill a receptacle of known capacity.
Sterling Run	Sterling Run, Cameron County	Oct. 7	------	2.28	25.2	.09	Made by wading near mouth of stream.
Tioga River	Morris Run, Tioga County	3	.02	2.15	49.3	.04	At weir constructed by Morris Run Coal Mining Co., about 6000 feet downstream from mouth of Fall Creek.
Tioga River	Morris Run, Tioga County	3	.02	2.05	49.3	.04	
Tioga River	Morris Run, Tioga County	3	.02	1.83	49.3	.04	
Ohio Basin							
Little Chartiers Creek	Near Linden, Washington County	June 6	Referenced	38.8	39.8	.97	Made by wading about 700 feet upstream from Donaldson's Bridge.
Little Chartiers Creek	Near Canonsburg, Washington County	6	1.74	70.2	27.5	2.55	Made by wading about ½ mile upstream from Filtration Plant.
Little Chartiers Creek	Near Linden, Washington County	28	1.30	23.7	39.8	.60	Made by wading about 700 feet upstream from Donaldson's Bridge.
Little Chartiers Creek	Near Canonsburg, Washington County	29	2.10	161	27.5	5.85	Made by wading about ½ mile upstream from Filtration Plant.
Tributary, Little Chartiers Creek	Near Linden, Washington County	6	------	18.7	3.92	.48	Made by wading near mouth of stream.

* 5 inch head on overflow section.

TABLE NO. XXIII

Summary of Run-off in second-feet per square mile, Run-off depth in inches, Precipitation and Per Cent Run-off to precipitation, for the year ending Sept. 30, 1928

Delaware Basin

Station	Drainage area	Run-off in second-feet per square mile													Run-off	Precipitation	Per cent
	Square miles	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Year	Depth in inches	Depth in inches	Run-off to precipitation
Lackawaxen River near West Hawley --	212	4.16	3.72	3.79	1.60	2.12	2.05	4.29	2.97	4.52	3.32	1.75	1.07	2.95	40.10	62.0	64.7
Wallenpaupack Creek at Wilsonville ---	227	3.55	4.35	3.14	2.12	2.25	2.80	3.16	3.64	2.78	3.75	1.30	1.42	2.86	38.89	59.7	65.1
Shohola Creek near Shohola ----------	82	4.24	6.48	4.88	1.80	2.45	2.37	4.28	3.45	3.34	4.91	2.66	2.09	3.59	48.75	62.0	78.6
Delaware River at Port Jervis, N. Y. --	3,070	4.10	5.21	4.95	1.72	2.31	2.25	4.30	3.62	3.88	3.29	1.87	1.22	3.22	43.92	59.4	73.9
Bushkill Creek near Shoemakers ------	115	3.43	5.16	4.56	1.91	3.04	2.57	4.62	2.90	3.91	4.63	2.57	2.61	3.49	47.48	65.0	73.0
McMichaels Creek near Stroudsburg --	62	2.50	3.77	4.39	1.73	2.75	1.65	3.92	2.63	3.58	4.85	1.71	1.65	2.92	39.80	66.0	60.3
Delaware River at Belvidere, N. J. ----	4,540	3.74	4.65	4.49	1.83	2.38	2.17	3.96	3.17	3.48	3.70	2.20	1.52	3.10	42.33	60.4	70.1
Lehigh River at Tannery -------------	335	4.63	4.06	4.21	1.63	2.42	2.13	4.60	3.31	4.54	4.33	1.18	.809	3.16	42.98	60.0	71.6
Lehigh River at Bethlehem a ----------	1,240	3.48	3.60	4.23	1.78	3.02	2.08	3.90	2.78	3.43	4.09	1.50	1.03	2.91	39.60	59.3	66.8
Delaware River at Riegelsville b ------	6,190	3.55	4.28	4.47	1.76	2.60	2.18	3.88	3.05	3.36	3.89	2.16	1.51	3.07	41.61	60.1	69.2
Delaware River at Trenton, N. J. c --	6,800	3.62	4.07	4.28	1.85	2.65	2.04	3.69	2.91	2.97	3.51	2.03	1.50	2.93	39.83	60.0	66.4
Little Schuylkill River at Tamaqua d -	44	5.14	2.93	5.48	1.49	3.16	2.25	5.16	3.23	4.66	4.20	.655	.475	3.23	44.05	65.1	67.7
Schuylkill River at Reading e --------	900	2.20	2.01	3.46	1.58	3.21	2.16	3.29	2.28	2.89	3.37	1.36	.918	2.39	32.53	55.4	58.7
Schuylkill River at Pottstown f -------	1,170	2.29	1.99	3.52	1.58	3.74	2.22	3.40	2.44	2.54	3.05	1.26	.906	2.41	32.74	54.8	59.7
Perkiomen Creek at Graters Ford ------	280	3.06	2.86	3.86	1.42	5.00	1.66	3.32	1.41	1.59	3.51	1.58	.675	2.49	33.83	59.2	57.1
Schuylkill River at Norristown g ------	1,760	2.90	2.54	4.05	1.45	4.45	1.96	3.31	2.06	2.10	3.16	1.32	.943	2.51	34.19	55.8	61.3
Brandywine Creek at Chadds Ford --	285	1.94	2.10	2.86	1.59	3.44	2.02	2.36	1.88	2.80	2.04	1.98	1.60	2.21	30.08	61.4	49.0

a Run-off does not include the quantity of water diverted past the gage through the Lehigh Coal and Navigation Company Canal. Canal was closed Nov. 20 to Mar. 25.

b Run-off includes 230 second-feet, estimated quantity of water diverted past the gage through the Delaware Division of the Pennsylvania Canal, Oct. 1 to Nov. 19 and Mar. 26 to Sept. 30.

c Run-off includes the following diversions:—Pennsylvania Canal, 20 second-feet Oct. 1 to Nov. 19 and Mar. 26 to Sept. 30; Trenton Power Canal, 250 second-feet daily; Delaware and Raritan Canal feeder, 130 second-feet Oct. 1 to Dec. 31 and Mar. 1 to Sept. 30.

d Run-off includes the quantity of water diverted from the stream by the Panther Valley Water Company.

e Run-off does not include the quantity of water diverted past the gage through the Schuylkil Navigation Company Canal. Canal was closed for navigation purposes after Nov. 19.

f Run-off does not include the quantity of water diverted past the gage through the Schuylkill Navigation Company Canal. Canal was closed for navigation purposes after Nov. 28.

g Run-off includes the quantity of water diverted past the gage through the Schuylkill Navigation Company Canal.

TABLE NO. XXIV

Summary of Run-off in second-feet per square mile, Run-off depth in inches, Precipitation and Per Cent Run-off to precipitation, for the year ending Sept. 30, 1928

Susquehanna Basin

Station	Drainage area	Run-off in second-feet per square mile													Run-off	Precipitation	Per cent
	Square miles	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Year	Depth in inches	Depth in inches	Run-off to precipitation
North Branch Susquehanna River at Towanda ----------	7,770	2.19	3.72	3.77	1.44	1.69	2.32	3.09	2.05	2.24	1.39	0.672	0.207	2.06	28.09	45.8	61.3
Towanda Creek near Monroeton ------	218	3.30	3.38	3.85	1.18	2.02	2.06	3.97	2.27	4.30	1.32	.273	.103	2.33	31.72	50.0	63.4
Tunkhannock Creek at Dixon ----------	393	3.79	2.88	3.46	1.36	2.06	1.73	3.97	2.20	3.05	1.46	.728	.303	2.25	30.58	59.9	51.1
Lackawanna River at Moosic ----------	265	5.09	4.08	4.57	1.90	2.66	2.57	4.49	3.92	4.60	4.38	2.13	1.10	3.46	47.11	56.4	83.5
North Branch Susquehanna River at Wilkes-Barre ----------	9,960	2.47	3.22	3.54	1.52	1.77	2.19	3.24	2.38	2.32	1.73	.774	.253	2.12	28.81	47.8	60.3
Wapwallopen Creek near Wapwallopen	46	3.78	2.24	3.04	1.27	2.11	1.70	3.85	2.33	3.20	3.17	.620	.320	2.30	31.35	60.9	51.5
Fishing Creek at Bloomsburg ----------	355	2.73	2.50	4.28	1.49	2.20	2.35	4.76	1.99	2.96	5.44	.670	.445	2.65	36.11	50.8	71.1
North Branch Susquehanna River at Danville ----------	11,200	2.44	3.04	3.68	1.43	1.73	2.11	3.16	2.33	2.26	2.03	.762	.311	2.11	28.70	48.5	59.2
West Branch Susquehanna River at Bower ----------	320	2.96	3.34	4.97	1.47	3.47	4.59	5.75	1.95	3.91	2.39	1.01	.283	3.00	40.87	53.6	76.2
Clearfield Creek at Dimeling ----------	370	2.37	2.56	3.38	1.34	2.37	3.95	5.16	2.04	3.46	2.22	.835	.197	2.49	33.85	53.3	63.5
Driftwood Branch Sinnemahoning Creek at Sterling Run ----------	270	.349	3.52	5.15	1.15	1.56	3.42	5.37	1.26	4.22	1.70	.389	.207	2.35	32.01	55.5	57.7
West Branch Susquehanna River at Renovo ----------	2,990	1.21	2.84	4.55	1.38	2.19	3.38	5.25	2.05	4.05	2.71	.659	.228	2.53	34.54	53.0	65.2
Bald Eagle Creek at Milesburg --------	140	1.58	3.33	3.51	1.26	2.15	3.81	5.79	1.80	4.63	1.93	.580	.084	2.53	34.44	50.2	68.6
Bald Eagle Creek at Beech Creek Station ----------	565	1.10	2.64	3.20	.943	1.65	2.62	4.87	2.28	3.63	2.25	.727	.398	2.19	29.77	48.5	61.4
Pine Creek at Cedar Run ----------	590	.708	3.75	3.83	.905	1.37	2.81	4.05	1.93	3.20	1.97	.369	.141	2.08	28.35	46.2	61.4
Lycoming Creek near Trout Run -------	185	1.78	3.61	4.43	.908	1.49	2.48	4.28	2.60	4.64	2.64	.339	.172	2.44	33.29	54.1	61.5
West Branch Susquehanna River at Williamsport ----------	5,670	1.16	2.93	4.25	1.23	2.08	3.00	4.90	2.40	4.00	2.91	.605	.257	2.47	33.68	51.4	65.5
Loyalsock Creek at Loyalsock ---------	433	2.54	3.14	4.13	1.18	1.90	2.11	4.18	2.79	4.18	2.40	.591	.370	2.45	33.43	54.0	61.9
Frankstown Branch Juniata River at Williamsburg ----------	295	1.94	2.12	2.35	.963	1.89	3.13	4.51	2.56	1.88	1.76	.464	.302	1.99	27.05	48.3	56.0
Raystown Branch Juniata River at Saxton ----------	790	1.89	1.43	1.90	.608	1.58	2.51	3.96	2.39	2.00	1.89	.330	.224	1.72	23.48	44.2	53.1
Tuscarora Creek near Port Royal ----	205	4.06	2.15	2.39	.878	2.16	2.69	4.98	2.63	1.50	2.14	.424	.228	2.19	29.75	53.1	56.0
Juniata River at Newport ----------	3,380	2.40	1.93	2.45	1.03	1.75	2.42	4.11	2.78	1.92	2.32	.527	.271	1.99	27.13	48.1	56.4
Susquehanna River at Harrisburg ----	24,100	2.05	2.52	3.55	1.13	1.78	2.20	3.71	2.44	2.43	2.33	.705	.327	2.10	28.54	51.3	55.6
Little Swatara Creek near Pine Grove	34	3.59	1.78	3.71	1.61	3.18	2.21	3.32	1.97	4.06	2.10	.700	.397	2.38	32.42	56.7	57.2
Swatara Creek at Harpers ----------	334	3.62	1.83	3.74	1.55	3.29	2.16	3.47	2.03	3.11	2.11	.512	.359	2.31	31.45	54.4	57.8
South Branch Codorus Creek near York a ----------	114	1.62	.856	1.94	1.18	3.07	1.95	2.30	1.90	1.96	1.90	1.39	1.09	1.76	23.95	56.3	42.5

a Run off includes the quantity of water diverted from the stream by the York Water Company.

TABLE NO. XXV

Summary of Run-off in second-feet per square mile, Run-off depth in inches, Precipitation and Per Cent Run-off to precipitation, for the year ending Sept. 30, 1928

Ohio Basin

Station	Drainage area	Run-off in second-feet per square mile												Run-off		Precipitation	Per cent
	Square miles	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Year	Depth in inches	Depth in inches	Run-off to precipitation
Allegheny River near Larabee	545	0.472	3.82	4.26	1.76	1.78	2.77	3.98	1.16	2.35	1.31	0.334	0.125	2.00	27.29	50.9	53.6
Brokenstraw Creek at Youngsville	290	.279	4.59	5.38	3.59	2.74	3.28	2.97	.852	5.00	1.73	.494	.218	2.58	35.12	51.1	68.7
Tionesta Creek at Nebraska	475	.318	4.42	5.98	2.44	2.10	3.33	3.73	1.15	4.44	2.15	.362	.180	2.55	34.64	49.4	70.1
Oil Creek near Rouseville	330	.240	2.96	4.30	2.31	2.13	2.58	2.38	.818	3.15	1.28	.442	.215	1.90	25.81	50.4	51.2
French Creek at Kimmeytown	207	.450	4.35	7.25	5.02	3.04	3.98	2.59	.361	1.94	.981	.314	.158	2.54	34.53	47.6	72.5
French Creek at Saegertown	586	.382	3.91	5.82	4.59	3.29	3.36	2.70	.703	2.29	1.50	.416	.213	2.42	33.05	47.3	69.9
Cussewago Creek near Meadville	88	.207	3.26	4.51	3.93	3.19	2.24	1.74	.435	1.83	.961	.220	.045	1.88	25.54	43.7	58.4
Allegheny River at Franklin	6,010	.359	3.84	5.54	3.04	2.36	2.95	3.13	.995	2.90	1.46	.439	.164	2.26	30.77	48.0	64.1
Clarion River near Piney	980	.331	2.52	4.30	1.74	2.06	2.79	3.56	1.52	3.74	1.78	.440	.165	2.07	28.23	50.9	55.5
Red Bank Creek at Saint Charles	540	.554	2.46	5.83	1.27	2.48	3.22	3.69	1.49	3.94	2.69	.594	.206	2.37	32.20	51.6	62.4
Mahoning Creek near Dayton	322	1.05	2.52	3.91	1.10	2.69	2.94	4.75	2.07	3.88	2.85	1.05	.269	2.42	32.91	52.5	62.7
Allegheny River at Kittanning	9,010	.472	3.58	6.19	2.63	2.48	3.24	3.51	1.29	3.40	1.98	.612	.191	2.49	33.87	47.3	71.6
Crooked Creek at Hileman's Farm	279	1.84	2.47	4.01	1.16	3.58	2.87	3.62	1.37	4.27	4.27	1.13	.112	2.54	34.62	56.2	61.6
Stony Creek at Johnstown a	468	3.65	2.98	3.33	1.53	3.86	4.19	5.26	2.82	2.00	1.80	.551	.359	2.61	35.46	48.6	73.0
Blacklick Creek at Blacklick	386	3.06	2.72	3.76	1.41	3.99	3.32	4.46	1.45	3.32	2.93	.681	.147	2.59	35.35	56.5	62.6
Loyalhanna Creek at New Alexandria	264	3.42	3.58	3.55	1.13	4.05	3.34	4.02	1.95	2.82	2.14	.322	.120	2.53	34.39	55.8	61.6
Kiskiminitas River at Avonmore	1,720	3.01	2.79	3.55	1.45	3.48	3.67	4.77	2.19	2.94	2.59	.569	.279	2.60	35.40	53.4	66.3
Youghiogheny River at Friendsville, Md.	295	1.88	2.63	3.86	2.24	3.05	3.66	3.49	2.45	2.40	2.53	1.60	1.15	2.58	35.07	54.6	64.2
Casselman River at Markleton	365	2.16	2.40	3.15	1.54	2.20	3.56	4.08	2.40	1.87	1.23	.353	.193	2.09	28.51	51.3	55.6
Laurel Hill Creek at Ursina	122	4.62	3.81	4.81	2.01	3.17	4.99	5.38	2.33	2.90	2.43	.431	.211	3.09	42.08	53.2	79.1
Youghiogheny River at Connellsville	1,320	2.49	2.52	3.77	1.81	2.82	3.68	4.05	2.54	2.29	1.98	.803	.429	2.43	33.10	52.9	62.6
Youghiogheny River at Sutersville	1,680	2.43	2.64	3.49	2.08	2.84	3.12	3.55	2.32	2.12	2.07	.679	.365	2.30	31.40	52.4	59.9
Turtle Creek near Trafford	55	2.75	3.00	4.58	1.00	3.78	2.93	4.07	.867	4.75	4.02	.285	.137	2.67	36.87	47.2	77.1
Chartiers Creek at Carnegie	260	.504	2.20	3.64	1.02	2.87	2.87	3.02	1.19	2.66	3.66	.527	.230	2.03	27.63	48.2	57.3
Shenango River near Jamestown	182	.121	1.02	4.36	2.78	3.10	1.52	1.60	.401	1.90	.645	.207	.052	1.47	20.01	41.1	48.7
Little Shenango River at Greenville	107	.174	1.63	4.87	2.57	3.54	2.29	1.04	1.16	2.62	1.99	.907	.209	1.96	28.72	46.0	58.1
Pymatuning Creek near Orangeville	170	.068	.776	5.19	2.91	3.64	1.55	1.79	.494	2.35	1.86	.641	.065	1.78	24.14	39.6	61.0
Shenango River at Sharon	611	.106	1.00	4.32	2.31	3.06	1.67	1.61	.573	1.93	1.51	.570	.098	1.56	21.22	42.8	49.6
Shenango River at New Castle b	797	.112	.975	4.14	2.20	2.91	1.62	1.61	.570	1.97	1.68	.711	.109	1.54	21.06	43.3	48.7
Connoquenessing Creek near Hazen	355	1.06	3.86	5.01	1.79	3.15	2.34	2.09	.645	3.21	3.86	.490	.075	2.30	31.21	45.8	68.1
Slippery Rock Creek at Wurtemburg	404	.624	3.00	5.67	1.65	2.60	2.82	1.65	.644	2.77	2.52	.975	.295	2.10	28.67	50.3	56.8

a Run-off includes the quantity of water diverted from Quemahoning Reservoir.
b Run-off includes the quantity of water diverted from the stream at the New Castle Water Works.

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